

Nuclear Waste Disposal

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Proposed Appropriation Language

For nuclear waste disposal activities to carry out the purposes of Public Law 97-425, as amended, including the acquisition of real property or facility construction or expansion, [\$190,000,000] \$749,000,000, to remain available until expended and to be derived from the Nuclear Waste Fund: *Provided, That [none of the funds provided herein may be used for international travel], not to exceed \$749,000,000 of the fees collected by the Secretary and deposited into the Fund under Public Law 97-425, as amended, shall be credited to this amount as offsetting collections and shall be available until expended for necessary expenses of this account: Provided further, That the total amount appropriated under this heading from the Fund for fiscal year 2005 shall be reduced as such offsetting fees are received so as to result in a final total fiscal year 2005 appropriation from the Fund estimated at not more than \$0. (Energy and Water Development Appropriation Act, 2004.)*

Notwithstanding the Nuclear Waste Policy Act of 1982, Public Law 97-425, as amended, the first and second provisos under this heading shall become effective only upon enactment of authorizing legislation changing the nature of the fees collected by the Secretary and deposited into the Nuclear Waste Fund by making the collection of up to \$749,000,000 of such receipts as offsetting collections in fiscal year 2005 subject to approval in an appropriations Act.

Explanation of Change

To enable operations by 2010, funding between 2005 and 2010 will require an average of \$1.3 billion per year from the Nuclear Waste Fund and the Defense Nuclear Waste appropriations. This is significantly higher than previous annual appropriations. Over the past eight years severe funding constraints have threatened the Program's ability to meet previous schedules. Nuclear utilities have averaged annual payments into the Nuclear Waste Fund in excess of \$700 million, while appropriations from the fund have been much lower. Delays in receipt of waste beyond 2010 could cost the taxpayers in excess of \$1 billion per year. For the successful management of a major engineering and construction project of this kind, stable and certain funding during this phase of the project is absolutely essential. There is estimated to be in excess of \$14 billion in the Nuclear Waste Fund.

To address the issue of ensuring adequate resources to the project, the Administration will be submitting a legislative proposal to reclassify the fees, paid by the utilities into the Nuclear Waste Fund, as discretionary offsetting collections equal to the annual appropriations from the Fund. The total amount appropriated under this heading from the Fund for fiscal year 2005 will be reduced as such offsetting fees are received so as to result in a final total fiscal year 2005 appropriation from the Fund estimated at not more than \$0.

For this approach utilizing the receipts as offsetting collections to become effective, Congress must enact authorizing legislation changing the nature of the fees collected by the Secretary and deposited into the Nuclear Waste Fund by making the collection of up to \$749,000,000 of such receipts as offsetting collections in fiscal year 2005 subject to approval in an appropriations Act.

Nuclear Waste Disposal
Defense Nuclear Waste Disposal
Office of Civilian Radioactive Waste Management (OCRWM)

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2003 Comparable Appropriation	FY 2004 Original Appropriation	FY 2004 Adjustments	FY 2004 Comparable Appropriation	FY 2005 Request
Nuclear Waste Disposal					
Yucca Mountain Project	55,309	15,997	-71	15,926	427,943
Transportation ^a	7,948	63,800	-242	63,558	186,000
Program Management & Integration	21,191	30,003	-335	29,668	47,567
Program Direction	59,610	80,200	-473	79,727	87,490
Subtotal, Nuclear Waste Disposal	144,058	190,000	-1,121	188,879	749,000
Subtotal, Yucca Mountain Legislative Proposal – Mandatory Collection to Offset Discretionary Funding ^b					-749,000
Total, Nuclear Waste Disposal . . .	144,058	190,000	-1,121	188,879	0
Defense Nuclear Waste Disposal					
Yucca Mountain Project	312,952	390,000	-2,301	387,699	131,000
Total, Defense Nuclear Waste Disposal	312,952	390,000	-2,301	387,699	131,000
Total, Civilian Radioactive Waste Management	457,010	580,000	-3,422	576,578	131,000

^a FY 2003-2004: The “Waste Acceptance, Storage and Transportation” program element changed to “Transportation” in FY 2005. The “Waste Acceptance” sub-element in FY 2005 has been incorporated into the “Program Management & Integration” program element. The “Project Management” sub-element for FY 2003-2004 was incorporated into the “National Transportation” and “Nevada Transportation sub-elements in FY 2005.

^b This proposal shall become effective only upon enactment of authorizing legislation that approves the proposal.

**Nuclear Waste Disposal/
Defense Nuclear Waste Disposal/**

FY 2005 Congressional Budget

Preface

The mission of the Office of Civilian Radioactive Waste Management is critical to national and homeland security, nuclear non-proliferation and protecting our environment. The Federal responsibility for development of a geologic repository for the disposition of high-level radioactive waste materials is also necessary for the future of the Nation's energy supply. This budget for the Office of Civilian Radioactive Waste Management outlines the FY 2005 activities and funding required to implement the Federal policy for permanent geologic disposal of commercial spent nuclear fuel and high-level radioactive waste resulting from the Nation's commercial reactors and atomic energy defense activities.

This budget identifies the work needed in FY 2005, the short- and long-range program goals, benefits, and performance measurements to implement the Program mission.

Within the Nuclear Waste Disposal and Defense Nuclear Waste Fund, OCRWM has only one Program: Civilian Radioactive Waste Management (four subprograms: Yucca Mountain, Transportation, Program Management & Integration, and Program Direction).

This Overview will describe Strategic Context, Mission, Benefits, Strategic Goals, and Funding by General Goal. These items together put the appropriation in perspective. The Annual Performance Results and Targets, Means and Strategies, and Validation and Verification sections address how the goals will be achieved and how performance will be measured. Finally, this Overview will address Program Assessment Rating Tool (PART), and Significant Program Shifts.

Strategic Context

Following publication of the Administration's National Energy Policy, the Department developed a Strategic Plan that defines its mission, four strategic goals for accomplishing that mission, and seven general goals to support the strategic goals. Each appropriation has developed quantifiable goals to support the general goals. Thus, the "goal cascade" is the following:

Department Mission — Strategic Goal (25 yrs) — General Goal (10-15 yrs) — Program Goal (GPRA Unit) (10-15 yrs)

To provide a concrete link between budget, performance, and reporting, the Department developed a "GPRA unit" concept. Within DOE, a GPRA Unit defines a major activity or group of activities that support the core mission and aligns resources with specific goals. Each GPRA Unit has completed or will complete a Program Assessment Rating Tool (PART). A unique program goal was developed for each GPRA unit. A numbering scheme has been established for tracking performance and reporting.

The goal cascade accomplishes two things: First, it ties major activities for each program to successive goals and, ultimately, to DOE's mission. This helps ensure the Department focuses its resources on fulfilling its mission. Second, the cascade allows DOE to track progress against quantifiable goals and to tie resources to each goal at any level in the cascade. Thus, the cascade facilitates the integration of budget and performance information in support of the GPRA and the President's Management Agenda (PMA).

**Nuclear Waste Disposal/
Defense Nuclear Waste Disposal/**

FY 2005 Congressional Budget

Mission

The mission of the Office of Civilian Radioactive Waste Management (OCRWM) is to manage and dispose of high-level radioactive waste and spent nuclear fuel in a manner that protects health, safety, and the environment; enhances national and energy security; and merits public confidence.

Benefits

The Nation's commercial and defense high-level radioactive waste must be safely isolated to minimize the risk to human health and the environment. Disposition of these materials in a geologic repository is necessary to maintain our energy options, national security, to support a cleanup of our weapons sites, to continue operation of our nuclear-powered vessels, and the advance our international non-proliferation goals.

A permanent disposition of these materials also promotes non-proliferation objectives to dispose of the growing inventory of surplus weapons grade plutonium. The disposition of the waste generated by the Navy's principle combat vessels supports our Nation's security by permitting the continued operations of the Navy's fleet. Ultimately, the success of the project ensures the consolidation of nuclear materials currently located at 129 temporary storage sites in 39 states affecting nearly 162 million Americans and nearly every major waterway.

Strategic Goals

The Department's Strategic Plan identifies four strategic goals, one each for defense, energy, science, and environmental aspects of the mission, plus seven general goals that tie to the strategic goals. The Nuclear Waste Disposal and Defense Nuclear Waste Disposal appropriations support the following goal:

Environment Strategic Goal : To protect the environment by providing a responsible resolution to the environmental legacy of the Cold War and by providing for the permanent disposal of the Nation's high-level radioactive waste.

General Goal 7, Nuclear Waste: License and construct a permanent repository for nuclear waste at Yucca Mountain and begin acceptance of waste by 2010.

The program funded within the Nuclear Waste Disposal and Defense Nuclear Waste Fund appropriations have one Program Goal that contributes to the General Goal in the "goal cascade". This goal is General Goal 7, Nuclear Waste.

Program Goal 7.25.00.0, Planned Annual Operational Rate: The Yucca Mountain repository is licensed, constructed, and operating; the national and Nevada waste transportation systems are in place; activities required to support receipt and emplacement of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) at the repository are proceeding on schedule.

Contribution to General Goal

Within the Civilian Radioactive Waste Management Program, the Yucca Mountain Sub-Program contributes to General Goal 7 by preparing and submitting the license application to NRC by 2004 for a repository construction authorization by 2008 and subsequently constructing and operating the repository by 2010. The Transportation Sub-Program contributes to General Goal 7 by developing the transportation network, equipment, and facilities that are required for shipment of waste to the repository by 2010.

Funding by General Goal

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
General Goal 7, Nuclear Waste					
Program Goal 7.25.00.0, Planned Annual Operational Rate	457,010	576,578	880,000	+303,422	+52.6%
Subtotal, General Goal 4	457,010	576,578	880,000	+303,422	+52.6%
Total, General Goal 7 (Nuclear Waste Disposal and Defense Nuclear Waste Fund)	457,010	576,578	880,000	+303,422	+52.6%

Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results	FY 2004 Targets	FY 2005 Targets
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Yucca Mountain/Repository Design & Licensing (Phase 2A)

Complete public hearings on the Draft Environmental Impact Statement, which was published in August 1999. (MET TARGET)	Complete the scientific and technical documents that will provide the technical basis for a possible site recommendation. (MET TARGET)	Submit a Site Recommendation Report to the President. (MET TARGET)	Complete additional testing and analyses required to support license application design. (PARTIALLY MET TARGET)	Complete Draft License Application.	Complete and submit a license application for repository construction authorization to the NRC.
Select the reference design for site recommendation and license application. (MET TARGET)	Conduct statutory hearings in the vicinity of Yucca Mountain to inform the residents that the site is under consideration, and to receive comments regarding a possible site recommendation. (MET TARGET)	Submit a Final Environmental Impact Statement to the President as required by the Nuclear Waste Policy Act. (MET TARGET)	Complete development of repository conceptual design and request Acquisition Executive approval to start preliminary design, which will be used in the license application. (MET TARGET)		Complete repository preliminary design.
Select the reference natural systems models for site recommendation and license application.	Update all process models and conduct a total system performance assessment of use in the site recommendation. (MET TARGET)	Begin development of updated Total System Life Cycle Cost and Fee Adequacy reports. (MET TARGET)	Complete and issued updated Total System Life Cycle Cost and Fee Adequacy reports in preparation for license application. (MET TARGET)		Complete detailed work plan, cost estimate and schedule, and establish a performance measurement baseline for repository final design and construction.
	Complete and issue Total System Life Cycle Cost and Fee Adequacy reports. (MET TARGET)				Project management costs for the OCRWM management and operating contractor will be reduced one percent annually from an FY 2003 level of 17 percent to a level of 15 percent in FY 2005 and not to exceed 14 percent of its total costs by FY 2006.

Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results	FY 2004 Targets	FY 2005 Targets
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Transportation / National and Nevada

No related target.

No related target.

Issue draft Request for Proposals for waste acceptance and transportation services. (MET TARGET)

Issue Nuclear Waste Policy Act Section 180(c) Notice of Revised Proposed Policy and Procedures for public comment. (NOT MET)

Develop and issue the OCRWM Transportation Strategic Plan. (MET TARGET)

Approve the Transportation Project Plan for internal use by the Director of the National Transportation Program.

Issue Request for Proposals for transportation cask fleet system needed to support initial waste acceptance in 2010.

Issue Nevada Transportation draft Environmental Impact Statement (DEIS) and complete public hearings.

**Nuclear Waste Disposal and Defense Nuclear Waste Disposal
Office of Civilian Radioactive Waste Management**

Funding by Site by Program

(dollars in thousands)					
	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Chicago Operations Office					
Argonne National Laboratory					
Preclosure and Postclosure Safety Analysis	2,571	2,415	1,867	-548	-22.7%
Licensing Support Network	7	5	0	-5	-100.0%
Total, Argonne National Laboratory	2,578	2,420	1,867	-553	-22.9%
Total, Chicago Operations Office	2,578	2,420	1,867	-553	-22.9%
Idaho Operations Office					
Idaho National Engineering & Environmental Laboratory					
Demonstration Facilities	567	2,087	19,690	+17,603	+843.5%
Total, Idaho National Engineering & Environmental Laboratory	567	2,087	19,690	+17,603	+843.5%
Total, Idaho Operations Office	567	2,087	19,690	+17,603	+843.5%
NNSA Service Center					
NNSA Service Center					
Program Direction	479	960	902	-58	-6.0%
	479	960	902	-58	-6.0%
Lawrence Berkeley Site Office					
Lawrence Berkeley National Laboratory					
Preclosure and Postclosure Safety Analysis	12,766	6,785	8,239	+1,454	+21.4%
Project Support	0	40	0	-40	-100.0%
License Application	0	300	0	-300	-100.0%
Licensing Support Network	51	215	0	-215	-100.0%
Total, Lawrence Berkeley National Laboratory	12,817	7,340	8,239	+899	+12.2%
Total, Lawrence Berkeley Site Office	12,817	7,340	8,239	+899	+12.2%
Livermore Site Office					
Lawrence Livermore National Laboratory					
Preclosure and Postclosure Safety Analysis	17,890	19,015	19,373	+358	+1.9%
Project Support	0	47	0	-47	-100.0%
License Application	0	412	0	-412	-100.0%
Licensing Support Network	124	151	0	-151	-100.0%
Repository Facilities Design	15	0	0	+0	+0.0%
Total, Lawrence Livermore National Laboratory	18,029	19,625	19,373	-252	-1.3%
Total, Livermore Site Office	18,029	19,625	19,373	-252	-1.3%
Los Alamos Site Office					
Los Alamos National Laboratory					
Preclosure and Postclosure Safety Analysis	12,635	10,314	16,670	+6,356	+61.6%
Project Support	0	434	120	-314	-72.4%
License Application	0	254	0	-254	-100.0%
Licensing Support Network	150	64	0	-64	-100.0%
Total, Los Alamos National Laboratory	12,785	11,066	16,790	+5,724	+51.7%
Total, Los Alamos Site Office	12,785	11,066	16,790	+5,724	+51.7%
Nevada Site Office					
Nevada Test Site					
Site Operations	5,999	6,502	3,726	-2,776	-42.7%
Preclosure and Postclosure Safety Analysis	1,150	1,338	2,061	+723	+54.0%
Environmental, Safety & Health Support	429	48	54	+6	+12.5%
Total, Nevada Test Site	7,578	7,888	5,841	-2,047	-26.0%
Total, Nevada Site Office	7,578	7,888	5,841	-2,047	-26.0%

Office of Repository Development					
Yucca Mountain Project Office					
Repository Facilities Design	55,475	94,173	146,195	+52,022	+55.2%
Site Operations	25,694	24,726	93,520	+68,794	+278.2%
Project Support	71,627	64,081	71,332	+7,251	+11.3%
Preclosure and Postclosure Safety Analysis	82,526	94,217	63,202	-31,015	-32.9%
License Application	42,474	45,034	47,831	+2,797	+6.2%
Technical Alternatives	0	0	30,000	+30,000	+0.0%
External Oversight and PETT	19,841	11,341	21,341	+10,000	+88.2%
Program Direction	36,885	44,484	48,333	+3,849	+8.7%
Total, Yucca Mountain Project Office	334,522	378,056	521,754	+143,698	+38.0%
Sandia Site Office					
Sandia National Laboratory					
Preclosure and Postclosure Safety Analysis	14,097	11,784	12,930	+1,146	+9.7%
Repository Facilities Design	149	0	0	+0	+0.0%
Project Support	0	4,685	0	-4,685	-100.0%
License Application	0	898	0	-898	-100.0%
Licensing Support Network	136	72	0	-72	-100.0%
Total, Sandia National Laboratory	14,382	17,439	12,930	-4,509	-25.9%
Total, Sandia Site Office	14,382	17,439	12,930	-4,509	-25.9%
Total, NNSA Service Center	400,592	442,374	585,829	+143,455	+32.4%
Oak Ridge Operations Office					
Oak Ridge National Laboratory					
Preclosure and Postclosure Safety Analysis	536	555	0	-555	-100.0%
Licensing Support Network	1	1	0	-1	-100.0%
Total, Oak Ridge National Laboratory	537	556	0	-556	-100.0%
Oak Ridge Institute for Science & Education					
Support Educational Initiatives	491	491	491	+0	+0.0%
Total, Oak Ridge Institute for Science & Education	491	491	491	+0	+0.0%
Total, Oak Ridge National Office	1,028	1,047	491	-556	-53.1%
Richland Operations Office					
Pacific Northwest Laboratory					
Preclosure and Postclosure Safety Analysis	1,345	1,627	792	-835	-51.3%
Licensing Support Network	6	5	0	-5	-100.0%
Total, Pacific Northwest Laboratory	1,351	1,632	792	-840	-51.5%
Total, Richland Operations Office	1,351	1,632	792	-840	-51.5%
Washington Headquarters					
Transportation System	10,148	70,628	192,270	+121,642	+172.2%
Program Management & Integration	18,050	21,838	40,539	+18,701	+85.6%
Program Direction	22,696	34,552	38,522	+3,970	+11.5%
Total, Washington Headquarters	50,894	127,018	271,331	+144,313	+113.6%
Subtotal, Nuclear Waste Disposal and					
Defense Nuclear Waste Disposal ^{a, b}	457,010	576,578	880,000	+303,422	+52.6%
Subtotal, Yucca Mountain Legislative Proposal -- Mandatory					
Collection to Offset Discretionary Funding ^c			-749,000		
Total, Nuclear Waste Disposal and					
Defense Nuclear Waste Disposal			131,000		

^a FY 2004 number reflects a rescission of \$3 million.

^b FY 2005 number reflects a rescission of \$3.4 million.

^c This proposal shall become effective only upon enactment of authorizing legislation that approves the proposal.

Office of Civilian Radioactive Waste Management

Projected Receipts and Funding^a Effective Yield

(dollars in millions)

	FY 2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010
One mill/kWh Fee ^b	731	732	749	754	757	768	769	770
One-time Fee	0	0	0	0	0	0	0	2,176 ^g
Subtotal	731	732	749	754	757	768	769	2,946
Investment	446 ^c	801 ^c	860 ^c	915 ^c	977 ^c	1,032 ^c	1,075 ^c	1,121 ^c
Total Income	1,177	1,533	1,609	1,669	1,734	1,800	1,844	4,067
Nuclear Waste Disposal								
Nuclear Waste Fund, First Repository	84	109	662	666	667	674	672	669
Nuclear Waste Fund, Program Direction	60	80	87	88	90	94	97	101
Subtotal, Nuclear Waste Disposal	144 ^f	189	749	754	757	768	769	770
Subtotal, Yucca Mountain Legislative Proposal -- Mandatory Collection to Offset Discretionary Funding			-749 ^h	-754 ^h	-757 ^h	-768 ^h	-769 ^h	-770 ^h
Total, Nuclear Waste Disposal			0	0	0	0	0	0
Defense Nuclear Waste Disposal								
Defense Nuclear Waste Disposal	313	388	131	408	346	877	874	767
Total, Defense Nuclear Waste Disposal	313	388	131	408	346	877	874	767
Total, Civilian Radioactive Waste Management ..	457 ^f	577	131	408 ^d	346 ^d	877 ^d	874 ^d	767 ^e

^a Fee and investment income projections are subject to change based on the outcome of pending litigation and prevailing market conditions.

^b Estimated fee income for FY 2002-2010 is based on EIA projections as of December 19, 2003.

^c The projected values consist of anticipated effective interest earnings on all securities from the date of purchase. DRI-McGraw Hill forecasts are used for future interest rates. The actual investment income for FY 2003 has been adjusted to reflect year-end market value.

^d The FY 2004-2009 OCRWM Program numbers are based on the CFO Program Budget Memorandum 180 (Secretarial Decision), March 28, 2003.

^e OCRWM Program projection.

^f FY 2003 Rescission: Omnibus Appropriations, H.J. 2, Title VI-Offsets, February 20, 2003.

^g This estimation of one-time fees and interest due in 2010 is based on payments from Purchasers with an allocation in year one of acceptance. This estimation assumes that Purchasers will pay all one-time fees and interest owed for the contract that includes the year one allocation earner.

^h This proposal shall become effective only upon enactment of authorizing legislation that approves the proposal.

Site Description

Argonne National Laboratory

Argonne National Laboratory-East (ANL-E) is a research laboratory occupying a 700-acre tract of land located approximately 22 miles southwest of downtown Chicago in DuPage County, Illinois. It is a multi-disciplinary research and development laboratory that conducts basic and applied research to support the development of energy-related technologies.

Pre-closure and Post-closure Safety Analysis

ANL conducts waste form testing. This testing will help to improve models of waste form degradation and radionuclide mobilization processes.

Lawrence Berkeley National Laboratory

The Lawrence Berkeley National Laboratory is a multi-disciplinary research and development laboratory focused on national defense. The 200-acre Lawrence Berkeley National Laboratory site is located adjacent to the University of California in Berkeley, California.

Pre-closure and Post-closure Safety Analysis

LBNL conducts unsaturated zone flow and transport modeling, thermal hydrologic modeling activities, geophysics testing, and supports drift-scale testing. LBNL also performs the seepage tests in the exploratory studies facility alcoves and niches. LBNL supports the abstraction activities needed to conduct the Total System Performance Assessment in support of the license application. These testing activities support performance confirmation and license application update activities. Appropriate personnel will be available to support the licensing proceedings.

Lawrence Livermore National Laboratory

The Lawrence Livermore National Laboratory is a multi-disciplinary research and development laboratory focused on national defense, which has two geographic locations in northern California. The Livermore Site is approximately one square mile and is located 40 miles east of San Francisco, near the City of Livermore. Site 300 is comprised of about 11 square miles and is located 15 miles southeast of the Livermore Site.

Pre-closure and Post-closure Safety Analysis

LLNL conducts experiments and modeling activities needed for the repository design and to predict responses of the engineered and natural barrier systems to the heat generated by radioactive waste. The experiments include the drift-scale tests in the exploratory studies facility (ESF) and the heater tests in the cross drift. It also supports the abstraction activities needed to conduct the Total System Performance Assessment in support of the license application. These testing activities support performance confirmation and license application update activities. Appropriate personnel will be available to support the licensing proceedings.

Sandia National Laboratory

The Sandia National Laboratories-New Mexico (SNL) site located in Albuquerque, New Mexico, is a research and development facility with a primary mission of developing and testing non-nuclear components of nuclear weapons.

Pre-closure and Post-closure Safety Analysis

SNL conducts in-situ monitoring in the exploratory studies facility (ESF) and in the cross drift, performance confirmation testing, and performance assessment modeling. The laboratory conducts geoengineering and rock mechanics studies, and backfill analyses. These testing activities support performance confirmation and license application update activities. Appropriate personnel will be available to support the licensing proceedings.

Los Alamos National Laboratory

The Los Alamos National Laboratory (LANL) encompasses over 43 square miles in northern New Mexico and is divided into 47 technical areas that are used for scientific sites, experimental areas, waste disposal locations, roads and utilities, and safety and security buffers. Major programs include applied research in nuclear and conventional weapons development, nuclear fission and fusion, nuclear safeguards and security, and environmental and energy research.

Pre-closure and Post-closure Safety Analysis

LANL conducts geochemistry, mineralogy, colloid transport studies, laboratory and field-scale transport tests, and develops radionuclide transport models for the unsaturated and saturated zone groundwaters at the site. It collaborates with the United States Geologic Survey on isotopic and groundwater chemistry investigations needed for transport models. It also supports the abstraction activities needed to conduct the Total System Performance Assessment in support of the license application. These testing activities support performance confirmation and license application update activities. Appropriate personnel will be available to support the licensing proceedings.

Nevada Test Site

The Nevada Test Site is located 65 miles northwest of the city of Las Vegas and encompasses 1,573 square miles, an area roughly the size of Rhode Island. The activities are wide-spread, geographically diverse, and are the result of 928 historical above-ground and below ground nuclear tests conducted at the Nevada Test Site.

The Nevada Test Site supports the Yucca Mountain Project through the following activities.

Site Operations

NTS includes NTS common site support such as: logistics, fire protection, security, emergency medical services, roads/grounds maintenance, environmental operations, vehicle/construction equipment maintenance, facility maintenance, bus transportation, janitorial and refuse services, and power usage.

Pre-closure and Post-closure Safety Analysis

It includes providing Quality Affecting instrument calibration services and Material Test Lab services to support the Test Coordination Office/Natural System test activities.

Environmental, Safety and Health Support

It includes providing occupational medical services and Emergency Response.

NNSA Service Center

In support of the Yucca Mountain Project and the Office of Civilian Radioactive Waste Management (OCRWM) Program Direction budget element, the Nevada Operations Office administers disbursement of external oversight and payments-equal-to-taxes (PETT) funds to affected units of government, and also administers contracts/agreements with the OCRWM Management & Operating (M&O) contractor, support services contracts and all other financial/contract agreements associated directly with Yucca Mountain Project.

Program Direction

This element includes matrix support provided by the Nevada Operations Office.

Yucca Mountain Project in Nevada

The Yucca Mountain Project in Las Vegas, Nevada has the primary responsibility for preparing and submitting a license application to the Nuclear Regulatory Commission for construction of the repository. As the future owner and licensee of the repository, the Department of Energy develops and implements policies and strategies for the work to be completed and oversees the management and operating contractor and the United States Geological Survey in performing this work. The Yucca Mountain Project manages the contracts for the management and operating contractor and the support services contractors for work at Yucca Mountain.

License Application

It includes managing the effort for the preparation of a License Application (LA) for Construction Authorization (CA), including the Licensing Support Network, the docketing and review of the application by NRC, preparation and support for the licensing hearings and approval for CA. It also includes LA Amendments after CA, and submission of the LA Update for License to Receive and Possess Waste, its review and processing and terminates with the approval by NRC to receive and possess waste. It includes regulatory issue resolution, interactions with the NRC and management of regulatory commitments and licensing action items by DOE to NRC.

Repository Facilities Design

It comprises the management of all of the engineering, procurement and construction efforts to provide the Surface, Subsurface, Engineered Barriers and Offsite Utilities facilities that make up the Yucca Mountain Repository.

Pre-closure and Post-closure Safety Analysis

It includes collection of data; conducting analyses; and developing the total system performance assessment, pre-closure safety analyses, and performance confirmation documents. It also includes writing, updating and supporting the development of the safety analyses related portions of the License Application and Safety Analysis Report, and subsequent updates, as needed.

Site Operations

It includes Site Management Integration, Site Engineering, Site Construction, Site Maintenance and Operations. Activities includes field procurement, project controls, procedure integration, engineering, construction, operations and maintenance for Area 25 facilities at North Portal/ESF Pad, South Portal, Busted Butte, Central Support Area, and outlying areas

Technical Alternatives

As part of technical alternatives, it includes development of alternative approaches to the current baseline, which includes developing alternative approaches to improve the efficiency of repository operations, reduce the life-cycle costs, and enhance the schedule for waste emplacement.

Project Support

It includes project management, project support and coordination activities. Project Management functions include Project Management and Integration for technical development and control of products, establishing and maintaining engineering and scientific processes and procedures. Project support functions including Project Controls, Systems Engineering, Safeguards and Security, Information Management, Procurement, Environmental, Safety and Health, and General Project Services (e.g., Administrative Services, Technical Support Services, Communications, Facility and Fleet Operational Services). It also includes compliance with NEPA requirements and other compliance management activities.

External Oversight, Cooperative Agreement, and PETT

It includes financial assistance to the State of Nevada, Affected Units of Local Governments, and Payment Equal To Taxes.

Program Direction

It includes salaries and benefits, travel, and other related expenses of the federal work force in support of the Yucca Mountain Project. It also includes Yucca Mountain Project support services.

Oak Ridge Institute for Science and Education

ORISE administers undergraduate and graduate educational programs.

Oak Ridge Operations Office

The Oak Ridge Reservation encompasses about 37,000 acres in east Tennessee and is comprised of three facilities: the East Tennessee Technology Park; the Oak Ridge National Laboratory; and the Y-12 Plant. In FY05, the Oak Ridge Institute for Science and Education supports OCRWM by administering

undergraduate and graduate educational programs.

Oak Ridge National Laboratory

The Oak Ridge National Laboratory (ORNL) encompasses about 3,300 acres and has historically supported both the defense production operations and civilian energy research effort. The Oak Ridge National Laboratory currently conducts applied and basic research in energy technologies and the physical and life sciences.

In FY 2005, ORNL will support two activities for the Yucca Mountain Project: 1) Pre-Closure and Post-Closure Safety Analyses, ORNL provides support in analyzing commercial reactor criticality data, radiochemical assays and uncanistered fuel design. The laboratory also provides technical support for the disposal criticality topical report, thermal/neutronics model and criticality analysis process report, and 2) the Licensing Support Network through potential processing of relevant documents.

Pacific Northwest National Laboratory

The Pacific Northwest Laboratory is located on the Department's Hanford Site in Southeastern Washington State. The 1,465 square kilometer (560 square mile) site is bounded on the north by over 80 kilometers (50 miles) of the Columbia River, known as the Hanford Reach.

Pre-closure and Post-closure Safety Analysis

The objective of this work is to develop, document, and summarize the technical basis for prediction of waste-form degradation and radionuclide mobilization within the waste package under expected Yucca Mountain environment. The technical objectives of this activity include analysis, modeling, and coordination with waste form and mobilization testing by the Waste Form Testing Department. Further technical objectives of this activity include providing support for integration and review of products from other aspects of the project, as well as supporting interactions with outside organizations such as the international peer review, the repository consulting board, U. S. Nuclear Regulatory Commission (NRC), and Nuclear Waste Technical Review Board (NWTRB) on waste-form issues.

Nuclear Waste Disposal Defense Nuclear Waste Disposal

Funding Profile by Program

(dollars in thousands)

	FY 2003 Comparable Appropriation	FY 2004 Original Appropriation	FY 2004 Adjustments	FY 2004 Comparatabe Appropriation	FY 2005 Request
Nuclear Waste Disposal (NWD)					
Nuclear Waste Fund, First Repository	84,448	109,800	-648	109,152	661,510
Nuclear Waste Fund, Program Direction	59,610	80,200	-473	79,727	87,490
Subtotal, Nuclear Waste Disposal	144,058	190,000	-1,121	188,879	749,000
Subtotal, Yucca Mountain Legislative Proposal -- Mandatory Collection to Offset Discretionary Funding					-749,000 ^a
Total, Nuclear Waste Disposal					0
Defense Nuclear Waste Disposal (DNWD)	312,952	390,000	-2,301	387,699	131,000
Total, Defense Nuclear Waste Disposal	312,952	390,000	-2,301	387,699	131,000
Total, Civilian Radioactive Waste Management	457,010	580,000	-3,422	576,578	131,000

Funding Profile by Program Element

(dollars in thousands)

	FY 2003 Comparable Appropriation	FY 2004 Original Appropriation	FY 2004 Adjustments	FY 2004 Comparatabe Appropriation	FY 2005 Request
Nuclear Waste Disposal					
Yucca Mountain Project	55,309	15,997	-71	15,926	427,943
Transportation	7,948	63,800	-242	63,558	186,000
Program Management & Integration	21,191	30,003	-335	29,668	47,567
Program Direction	59,610	80,200	-473	79,727	87,490
Subtotal, Nuclear Waste Disposal	144,058	190,000	-1,121	188,879	749,000
Subtotal, Yucca Mountain Legislative Proposal -- Mandatory Collection to Offset Discretionary Funding					-749,000 ^a
Total, Nuclear Waste Disposal					0
Defense Nuclear Waste Disposal					
Yucca Mountain Project	312,952	390,000	-2,301	387,699	131,000
Total, Defense Nuclear Waste Disposal	312,952	390,000	-2,301	387,699	131,000
Total, Civilian Radioactive Waste Management	457,010	580,000	-3,422	576,578	131,000

Public Law Authorizations:

P.L. 97-425, "Nuclear Waste Policy Act" (1982)

P.L. 100-203, "Nuclear Waste Policy Amendments Act" (1987)

^a This proposal shall become effective only upon enactment of authorizing legislation that approves the proposal.

Mission

OCRWM's current mission is to "manage and dispose of high-level radioactive waste and spent nuclear fuel in a manner that protects health, safety, and the environment; enhances national and energy security; and merits public confidence."

Benefits

The Nation's commercial and defense high-level radioactive waste must be safely isolated to minimize the risk to human health and the environment. Disposition of these materials in a geologic repository is necessary to maintain our energy options, national security, to support a cleanup of our weapons sites, to continue operation of our nuclear-powered vessels, and the advance our international non-proliferation goals.

A permanent disposition of these materials also promotes non-proliferation objectives to dispose of the growing inventory of surplus weapons grade plutonium. The disposition of the waste generated by the Navy's principle combat vessels supports our Nation's security by permitting the continued operations of the Navy's fleet. Ultimately, the success of the project ensures the consolidation of nuclear materials currently located at 129 temporary storage sites in 39 states affecting nearly 162 million Americans and nearly every major waterway.

Nuclear Waste Disposal Defense Nuclear Waste Disposal

Five-Year Funding Profile by Program

(dollars in thousands)

	FY 2003 Comparable Appropriation	FY 2004 Comparable Appropriation	FY 2005 Request	FY 2006 Request	FY 2007 Request
Nuclear Waste Disposal					
Nuclear Waste Disposal					
Nuclear Waste Fund, First Repository	84,448	109,152	661,510	665,800	666,535
Nuclear Waste Fund, Program Direction	59,610	79,727	87,490	88,200	90,100
Total, Nuclear Waste Disposal	144,058	188,879	749,000	754,000	756,635
Subtotal, Yucca Mountain Legislative Proposal -- Mandatory Collection to Offset Discretionary Funding			-749,000 ^a	-754,000 ^a	-756,635 ^a
Total, Nuclear Waste Disposal			0	0	0
Defense Nuclear Waste Disposal					
Defense Nuclear Waste Disposal	312,952	387,699	131,000	408,000	346,000
Total, Defense Nuclear Waste Disposal	312,952	387,699	131,000	408,000	346,000
Total, Civilian Radioactive Waste Management	457,010	576,578	131,000	408,000	346,000

Five-Year Funding Profile by Program Element

(dollars in thousands)

	FY 2003 Comparable Appropriation	FY 2004 Comparable Appropriation	FY 2005 Request	FY 2006 Request	FY 2007 Request
Yucca Mountain Project Office					
License	42,949	47,411	47,831	64,500	62,500
Repository Facilities	56,206	96,260	165,885	266,174	291,099
Safety Analysis	143,516	128,050	153,134	141,581	90,900
Site Operations	31,693	31,228	97,246	35,000	35,000
Technical Alternatives	2,000	20,000	2,000	0	0
Project Support	72,056	69,335	71,506	69,256	72,256
External Oversight and Payments Equal to Taxes	19,841	11,341	21,341	21,341	21,341
Total, Yucca Mountain Project	368,261	403,625	558,943	597,852	573,096
Transportation					
National Transportation	7,348	43,830	163,000	153,907	77,568
Nevada Transportation	0	17,928	23,000	228,885	266,631
Project Management	600	1,800	0	0	0
Sub-Total, Transportation	7,948	63,558	186,000	382,792	344,199
Program Management & Integration					
Program Management	13,095	16,896	24,854	33,412	34,750
System Integration	7,163	11,854	21,780	58,544	59,290
International Waste Management	933	918	933	1,200	1,200
Subtotal, Program Management & Integration	21,191	29,668	47,567	93,156	95,240
Program Direction	59,610	79,727	87,490	88,200	90,100
Subtotal, Yucca Mountain Legislative Proposal -- Mandatory Collection to Offset Discretionary Funding			-749,000 ^a	-754,000 ^a	-756,635 ^a
Total, Civilian Radioactive Waste Management	457,010	576,578	131,000	408,000	346,000

^a This proposal shall become effective only upon enactment of authorizing legislation that approves the proposal.

Yucca Mountain Project

Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Yucca Mountain Project					
License	42,949	47,411	47,831	+420	+ 0.9%
Repository Facilities	56,206	96,260	165,885	+69,625	+72.3%
Safety Analysis	143,516	128,050	153,134	+25,084	+19.6%
Site Operations	31,693	31,228	97,246	+66,018	+211.4%
Technical Alternatives	2,000	20,000	2,000	-18,000	-90.0%
Project Support	72,056	69,335	71,506	+2,171	+3.1%
External Oversight and Payments Equal-to-Taxes	19,841	11,341	21,341	+10,000	+88.2%
Total, Yucca Mountain Project	368,261	403,625	558,943	+155,318	+38.5%

Description

The mission of the Yucca Mountain Project is to manage and dispose of high-level radioactive waste and spent nuclear fuel in a manner that protects public health and safety, and the environment; enhances national and energy security; and merits public confidence.

Benefit

The Nation's commercial and defense high-level radioactive waste must be safely isolated to minimize the risk to human health and the environment. Disposition of these materials in a geologic repository is necessary to maintain our energy options, national security, to support a cleanup of our weapons sites, to continue operation of our nuclear-powered vessels, and the advance our international non-proliferation goals.

To achieve this mission we are conducting scientific studies and analyses, developing the design, preparing the required regulatory documentation, updating the application, preparing safety analysis reports, preparing land withdrawal documentation, constructing the repository after receipt of the construction authorization, and receiving SNF and HLW for emplacement in the repository after receiving a license from the NRC to receive and possess.

The Yucca Mountain site was approved for development as a repository in FY 2002. This action was one of a series of key technical, legal, and policy decisions that are at the core of the Office of Civilian Radioactive Waste Management's principal objective - the permanent safe disposal of spent nuclear fuel and high-level radioactive waste. The next step in the process is for the Department to complete and submit a license application to the U.S. Nuclear Regulatory Commission, currently planned in FY 2005, for authorization to construct the repository. The U.S. Nuclear Regulatory Commission will then begin a rigorous and lengthy license application review. During this review, the Department will provide additional information, if requested, and continue with preliminary and final design of the repository facilities.

Detailed Justification

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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License	42,949	47,411	47,831
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The Department will complete the review and approval of a license application and submit it to the U.S. Nuclear Regulatory Commission in December 2004. The license application will provide the basis for U.S. Nuclear Regulatory Commission authorization to construct a repository at the Yucca Mountain site. To authorize construction of a repository, the U.S. Nuclear Regulatory Commission must review and consider the license application and the Department's environmental impact statement to determine that there is reasonable assurance that the types and amounts of radioactive materials can be received and emplaced at the repository without unreasonable risk to the health and safety of the public, and that there is reasonable expectation that the materials can be disposed of without unreasonable risk to the health and safety of the public. The U.S. Nuclear Regulatory Commission would consider whether the site and design comply with performance objectives and requirements, and whether other licensing criteria are met.

The U.S. Nuclear Regulatory Commission is expected to formally docket the license application within 90 days of submittal, at which time the technical review of the license application will start and the licensing proceedings will be initiated. The U.S. Department of Energy will respond to technical questions and requests for additional information from the U.S. Nuclear Regulatory Commission in a timely fashion and support any depositions, interrogatories, discovery and response to discovery, and appearance at hearings during the start of the licensing proceedings in FY 2005.

■ License Application	3,262	6,538	1,381
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Complete the final review and approval of the License Application for Construction Authorization and submit it to the U.S. Nuclear Regulatory Commission. Prepare and submit an amendment of the License Application for Construction Authorization to answer U.S. Nuclear Regulatory Commission technical questions during the review of the License Application for Construction Authorization.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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■ **NRC Interactions** **8,258** **12,726** **20,117**

Conduct interactions with the U.S. Nuclear Regulatory Commission (including the Advisory Committee on Nuclear Waste). These interactions support coordination, consultation, and issue resolution with the U.S. Nuclear Regulatory Commission. Provide support for hearings and adjudications associated with the License Application for Construction Authorization. Support includes depositions, interrogatories, discovery and response to discovery, and appearances at hearings.

Review project technical products, including revisions, that form the basis for the license application for compliance with U.S. Nuclear Regulatory Commission licensing requirements, acceptance criteria, and licensing precedent.

Throughout 2005 and beyond, significant work will be conducted in preparing for and participating in the licensing proceedings. The U.S. Nuclear Regulatory Commission is expected to issue a final decision on a construction authorization for the repository in three years. Therefore, the Department must aggressively prepare and present its defense of the license application. This includes addressing all issues presented regarding contentions, participating in discovery, preparing and providing testimony, and appearing at licensing proceedings. There are expected to be multiple Licensing Boards established for the process, multiple intervenors, and several hundred or more contentions filed. It is expected that a large number of contentions will be filed by potential parties. During the initial 5 months after docketing the license application the Atomic Safety and Licensing Board is scheduled to rule on admission of parties and admitting contentions. Additionally, discovery, including depositions will begin. Successful defense of the DOE's positions on these issues will require significant technical and administrative support.

After submittal of the License Application (LA) early in FY 2005. The U.S. Department of Energy will be subject to additional regulatory requirements as an applicant. It is anticipated that the acceptance review may result in some areas where the NRC determines additional information is required, although still acceptable for docketing. Licensing and technical project resources will be required for timely response to any such areas identified by the NRC. As a result of the NRC technical review of the LA, it is anticipated that NRC will request additional information in some areas, and require timely responses which allow NRC to complete their review in the allotted time. Responding to such requests requires intensive management attention, coordination, and facilitation by licensing personnel, and use of technical resources in the areas addressed by the request. It is also anticipated that there will also be the need for technical meetings to clarify the information presented in the LA, and to clarify requests for additional information and the project responses.

■	Licensing Support Network	28,691	22,212	10,382
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Continue to review new Program records and technical documents to determine if they are to be included in the population of the Licensing Support Network. Perform the Licensing Support Network operations and maintenance functions and support the enhancement of the Licensing Support Network as required. Update the Licensing Support Network certification of completeness upon submission of the license application. Maintain the access systems required by 10 CFR 2, subpart J.

Information Technology Justification – All planned Licensing Support Network expenditures are identified in the FY 2004 Exhibit 300 RW-04-02 prepared in support of the Licensing Support Network. The Licensing Support Network effort will peak in FY 2004. The effort will still be required to maintain data and include new documents as they are completed.

■	License, Regulatory, and Legal Support	1,000	3,000	10,000
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Specialized regulatory and legal support is required to assist in formulating licensing strategies, in preparing a high quality license application, and to provide specialized advice during the licensing process.

■	Licensing Docket Support	0	0	3,900
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The U.S. Nuclear Regulatory Commission is developing an Electronic Hearing Docket which is an electronic information system that will receive, distribute, store, and retrieve docket materials for high-level waste licensing proceedings.

All information that DOE intends to provide during the high-level waste hearing in defense of the U.S Department of Energy License Application must be identified and prepared in an acceptable format to the Electronic Hearing Docket.

Items in the Electronic Hearing Docket for the high-level waste repository licensing proceedings include:

- 1) The U.S. Department of Energy license application
- 2) List and copies of all exhibits
- 3) Party pleadings (documents in which parties or their lawyers “plead” their case/viewpoints/arguments on anything in dispute),
- 4) Issuances in response to pleadings (such as discovery-related motions and motions to limit or exclude certain evidence that is expected to be presented at the hearing).

Information Technology Justification - An Exhibit 300 has yet to be prepared for the Licensing Docket Support activity, but initial estimates suggest that the 2005 costs for the identification of documents, preparation of documents for submission, maintenance of the system software, databases, and documents will be around \$3.9 million. This figure is derived from the processing

requirements for an estimate of 1,000 potential issues with about 100 documents required to address each issue being provided by the U.S. Department of Energy through 2005. The documents are assumed to be an average of 60 pages long. Processing includes conversion to Portable Data Format and ensuring, compliance of Section 508 of the Rehabilitation Act of 1973, as amended. In addition, the budget includes the development of several databases in association with litigation and discovery and the association with related litigation and discovery issues.

■ **Commitment Management** **1,738** **2,935** **2,051**

Identify and ensure fulfillment of commitments to the U.S. Nuclear Regulatory Commission. Maintain a database for identifying, tracking, and managing the U.S. Department of Energy commitments, comments, and decisions. Monitor nuclear industry developments and advise the project as appropriate. Support evaluations of deficiencies to comply with 10 CFR 63.73.

Repository Facilities **56,206** **96,260** **165,885**

This element comprises all engineering, procurement and construction efforts to develop the Surface, Subsurface, Engineered Barriers and Off-site Utilities facilities that make up the Yucca Mountain Repository. The focus of FY 2005 is the development of the preliminary design.

Information Technology Justification – Costs are identified and described fully in FY 2004 Exhibit 300 for Engineering, Procurement and Construction Systems (RW-04-01). While the engineering, procurement and construction will be fully implemented prior to FY 2005, maintenance and lease costs will continue for the duration of the engineering effort. The balance of the estimated costs is required to ensure continued operation and implementation of new technologies.

■ **Surface Facilities** **33,469** **53,086** **87,989**

Surface Facilities preliminary design includes:

- 1) Buildings, operations, and systems located in the radiological controlled area, those buildings, systems, and operations outside the radiologically controlled area, on-site transportation, and all on-site and off-site utilities
- 2) Calculations supporting development of design drawings and specifications
- 3) General Arrangement Drawings, Building Structural and Architectural Plan, Sections, and Details, seismic and structural analysis, foundation analysis, equipment qualification, and tornado missile analysis
- 4) Building structures and foundations, electrical power and lighting, instrumentation and controls for controlling systems, mechanical handling equipment, fire protection, and heating, ventilation, and air-conditioning systems.

• **Receipt/Packaging Facilities** **20,806** **21,090** **26,547**

Develop the preliminary design for the systems, structures and components for the repository receipt / packaging facilities, whose primary functions are (a) weld and heat-treat the second and outer lids, (b) decontaminate the waste package, (c) remediate off-normal waste packages

(if necessary) and, (d) prepare the waste package for load-out to emplacement.

Develop the preliminary design for the transporter receipt facilities, which will receive carriers from Off-site with transportation casks loaded with commercial spent nuclear fuel, U.S. Department of Energy spent nuclear fuel/high-level radioactive waste, or naval fuel, unload the casks from the transporter, place the transportation casks on carts, and transport the cask throughout the dry transfer facilities. After the cask is emptied and decontaminated, the empty transporter cask returns the cask to the transporter for shipment off-site.

Develop the preliminary design for the surface facility within the surface and subsurface facilities for providing surge capacity for waste prior to emplacement. Activities include designing the North Portal Pad site as part of the receipt/packaging facilities area; this area is available to provide a surge capacity for waste being processed through the monitored geological repository surface facilities.

• **Waste Disposal Preparation Facilities 583 5,696 5,172**

Develop the preliminary design for the systems, structures and components for the repository waste disposal preparation facilities, which will receive and store empty disposal containers, configure the disposal containers for loading, and support the transfer of the disposal containers to the dry transfer facilities.

Develop the preliminary design for the heavy equipment maintenance facilities, including foundation, structure, and utilities. The systems required for this building will be used for maintenance and repair of subsurface rail equipment such as locomotives and rail cars conveyor components, excavation equipment components and components of surface equipment related to subsurface excavation such as rail car dump facilities, and equipment used to process and place waste would include waste package transporters and gantries.

• **Low Level Waste Facilities 391 4,099 0**

Completed the preliminary design for the low-level radioactive waste treatment system, which included providing the complete design for buildings, utilities, structures, foundations, waste collection, electrical power and lighting, instrumentation and controls, mechanical handling equipment, fire protection, and HVAC. This task was completed in FY 2004.

• **Remediation and Maintenance Facilities 2,661 1,656 756**

Develop the preliminary design for the systems, structures and components for the repository remediation and maintenance facilities, which contain wet and dry processing areas within the facility to allow performing repairs of waste packages and/or transportation casks. The work includes design of the building structure and foundation, waste collection, electrical power and lighting, instrumentation and controls for controlling systems, operating equipment, fire protection, mechanical handling equipment, as low as is reasonably achievable assessment, shielding, and heating, ventilation, and air-conditioning systems.

• Balance of Plant Facilities	178	161	9,511
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Develop the preliminary design for the systems, structures and components for the repository balance of plant facilities, including facilities such as the administrative building, warehouses, emergency medical services, visitor center, motor pool, central shops, refueling station, and access control.

Develop the preliminary design for the Utility Building, which will house most of the major components associated with providing utility services to the North Portal Surface Facilities. The work will include a cooling tower located nearby. The following main utility systems will be housed within or adjacent to the Utility Building: chillers, hot water boilers, water softening system, de-ionized water system and compressed air system.

• On-Site Infrastructure Facilities	7,683	17,697	18,402
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Develop the preliminary design for the systems, structures for the Multi-Structure Systems, which include those systems common between primary structures and primary systems within the project boundaries. Multi-Structure Systems are comprised of utility systems, civil/structural site systems, electrical systems, communications, mechanical systems, and general site preparation. Design includes developing the site development plan, and providing an monitored geologic repository site layout with building locations, road and rail layout, utility locations and storm drainage layout, and seismic model development, seismic design criteria document, and soil structure interaction document.

• Demonstration Facilities	567	2,087	19,693
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Compliance with U.S. Nuclear Regulatory Commission rules will require the U.S. Department of Energy to provide a training facility to support monitored geologic repository operator qualification, facility mockups, and equipment prototype testing, which includes system testing, proof of concept (new technologies) tests, proficiency tests, and mockup (remote operations) tests.

Continue design of a training and test facility. This facility will be a training and test facility for surface handling operations to support operator qualification, facility mockups, and system integration testing. The facility will provide space for full-scale equipment prototype tests and facility mockups of hot cell high bays, transportation casks, waste packages, emplacement drifts, and an operating gallery. The facility would also be equipped with overhead bridge cranes, remote manipulators, a rail transport system, a machine/instrument shop, a small laboratory, communications, computers, a control center, and mechanical-electrical equipment.

To provide the regulator and the public added confidence that retrievability requirements can be met, OCRWM will undertake detailed planning and preliminary design for a waste package retrievability demonstration utilizing mock waste packages and heaters.

- **Surface Facilities Equipment Prototyping.** **0** **0** **7,308**

Develop the preliminary design for the Equipment Prototypes and development of prototypes for first of a kind equipment. The prototypes is needed to support repository licensing, construction, and operations schedules in the pre-construction authorization time period.

- **Atomic Energy of Canada Limited.** **600** **600** **600**

Provide design review, selective materials tests and general support activities during the licensing and U.S. Nuclear Regulatory Commission review of the license application.

- **Subsurface Facilities** **8,530** **12,842** **43,852**

Subsurface facilities include the emplacement tunnels, which are divided into Panels to accommodate a sequential construction and operation scenario. Facilities also include utilities, excavation and ground support, and engineered barrier system equipment and handling systems.

- **Excavation and Ground Support.** **5,340** **9,673** **37,513**

Develop the preliminary design of tunneling and ground support for Subsurface Panel No. 1. Concepts and details developed for Panel 1 design will apply to all subsequent panels. The work scope for tunneling covers the primary subsurface openings and the emplacement drifts, turnouts, and performance confirmation facilities for Panel 1. The subsurface openings comprise access ramps, access mains, shafts, ventilation airways, safety and operational alcoves and bays, emplacement drifts and turnouts. Subsurface facilities design development will integrate concepts and details for waste transportation, emplacement and retrieval, utilities, radiation protection, as low as is reasonably achievable, subsurface ventilation and radon control, industrial health and safety, and subsurface operations concepts.

Work scope also includes preliminary design of the ground support systems for the emplacement drifts and non-emplacement openings, stability of non-emplacement openings such as emplacement drift turnouts and the intersections between emplacement and non-emplacement drifts, excavation launch and recovery chambers, access mains and exhaust air mains, ventilation shafts and raises with horizontal airways, performance confirmation drifts, portals, and access ramps.

Initiate procurement activities in preparation for underground excavation.

• Utilities and Systems	2,206	2,202	4,542
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Develop preliminary design for installed and mobile systems, including hoisting systems, ventilation, electrical, utilities (water, water collection and compressed air), monitoring systems, communications, muck removal systems, fire protection, life safety systems, backfill systems, area isolation systems and closure.

• Engineered Barrier System Equipment	984	967	1,797
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Develop the preliminary design for equipment for the Waste Emplacement/Retrieval system, which transfers loaded waste packages from the surface processing facility to the subsurface repository and places the waste package at the appropriate location in the emplacement drift, and can retrieve a waste package from an emplacement drift and return it to the surface for processing at a specific facility.

The design includes the waste package transporter, emplacement gantry, drip shield gantry, emplacement drift forklift, performance confirmation inspection gantry, transfer dock at emplacement drift, catenary and third rail power, instrumentation and controls, as low as is reasonably achievable assessments, and shielding design.

■ Engineered Barriers	14,207	30,332	34,044
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Develop preliminary design of the engineered barriers, including the activities and products to support the license application. Engineered barriers consist of the waste packages (including waste forms), process equipment, waste package emplacement pallets, supports and drip shields.

• Waste Package	8,015	11,632	11,401
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Provide the technical basis for the waste package, and specialty analysis support to other design organizations, as well as support for total system performance assessment and to Licensing to resolve Key Technical Issues and to prepare license application chapters.

Establish design-basis waste form characteristics for commercial spent nuclear fuel (boiling water reactor and pressurized water reactor), U.S. Department of Energy spent nuclear fuel, naval spent nuclear fuel, and glass high-level radioactive waste. Develop preliminary design for the waste package, including:

- 1) Uncanistered commercial spent nuclear fuel disposal containers (pressurized water reactor and boiling water reactor)
- 2) Naval spent disposal container
- 3) 5-defense high-level radioactive waste/ U.S. Department of Energy spent nuclear fuel co-disposal short disposal container.

• Waste Package Shields	105	142	332
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Develop preliminary design of the drip shields, including engineering analyses and calculations that support the evaluation of the conceptual designs, and preparation of engineering drawing describing the designs.

• Waste Package Pallets	87	147	797
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Develop preliminary design of the waste package pallets, including engineering analyses and calculations that support the evaluation of the conceptual designs, and preparation of engineering drawing describing the designs.

• Weld Cell Process Equipment	6,000	7,137	3,919
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Develop preliminary design of the weld cell process equipment, including engineering analyses and calculations that support the evaluation of the conceptual designs, and preparation of engineering drawing describing the designs. Process equipment includes remote welding systems, Non-Destructive Examination systems, inerting systems, stress mitigation systems and visual inspection and monitoring systems.

• Equipment Prototyping	0	11,274	17,595
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Develop preliminary design for waste package prototypes and prototypes of related ancillary equipment and hardware. Ancillary equipment and hardware consists of process equipment, waste package pallets, waste package supports and drip shields. Process equipment includes remote welding systems, Non-Destructive Examination systems, inerting systems, stress mitigation systems and visual inspection and monitoring systems.

Initiate the procurement (subcontract) for a contractor to acquire the waste package prototype. A significant FY 2005 cost will be to write the performance specifications and acquire the waste package prototype, which includes the inner cylinder, outer corrosion barrier, internal baskets, and trunnion handling mechanism. Develop design and specifications for the waste package pallet prototypes. The waste packages are set onto the pallets, which are placed with the waste packages in the emplacement drifts. The prototypes will be used for training for waste package handling, welding, non-destructive examination, stress mitigation, and the operational readiness review.

Safety Analysis	143,516	128,050	153,134
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This work area includes all activities related to safety analyses (pre-closure and post-closure) on the Yucca Mountain project. It includes collection of data; conducting analyses; and developing the total system performance assessment, pre-closure safety analyses, and performance confirmation documents. It also includes writing, updating, and supporting the development of the safety analyses related portions

of the License Application and Safety Analysis Report, requests for additional information, and subsequent updates, as needed. It also includes testing and data collection activities in support of the performance confirmation program described in the license application as required by the U.S. Nuclear Regulatory Commission.

■ **Total System Performance Assessment** **9,438** **11,555** **7,804**

Conduct additional total system performance assessment analyses of new information generated as a result of ongoing testing and any U.S. Nuclear Regulatory Commission specified analyses. Conduct needed analyses to support the detailed design development, including evaluations of operating conditions and specifications. Answer U.S. Nuclear Regulatory Commission requests for additional information, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support of U.S. Nuclear Regulatory Commission inspections.

■ **Unsaturated Zone Flow and Transport** **18,746** **15,772** **19,791**

The Unsaturated Zone Flow and Transport Model is a synthesis of key relevant submodels that collectively support a three-dimensional process model of flow and radionuclide transport. This synthesis also provides an integrated overview of the thermally-driven, coupled processes that affect the thermal-hydrological-chemical-mechanical environment in the host rock, especially around the drifts. As such, the Unsaturated Zone Model summarizes the interrelations of the various submodels contained within it, as well as the connections between these process models and those developed in other areas, notably the engineered barrier system.

• **Unsaturated Zone Flow and Transport Modeling and Analysis** **6,561** **5,520** **7,377**

Conduct analyses of new information related to the unsaturated zone generated by ongoing and additional testing and analysis to address key uncertainties and improve understanding of performance.

Conduct additional analyses of new information related to the unsaturated zone generated by ongoing testing. Revise process-level models and abstraction-level models that support the total system performance assessment based on newly acquired test and literature information. Perform U.S. Nuclear Regulatory Commission specified analyses, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections. Conduct needed analyses and modeling to support detailed design development. Submodels included are the integrated site model, the unsaturated zone flow and transport model, the seepage model, and coupled effects models.

• **Unsaturated Zone Testing** **12,185** **10,252** **12,414**

The database built during site characterization and throughout repository licensing and construction, and operation will be used to continually improve understanding of the performance of the unsaturated zone and to validate assumptions in the license application

that are the basis for nuclear regulatory findings about repository system performance. Some tests in the unsaturated zone started during site characterization will continue until repository closure as part of either the performance confirmation program or other testing and analysis programs. Tasks include unsaturated zone flow testing, seepage and drift shadow testing, unsaturated zone radionuclide transport testing, coupled thermal-hydrologic-chemical environment testing, and geologic mapping.

■ **Saturated Zone Flow and Transport** **9,254** **8,203** **17,019**

The saturated zone flow and transport model is a synthesis of key relevant submodels that collectively support a three-dimensional process model of flow and radionuclide transport. As such, the saturated zone flow and transport model summarizes the interrelations of the various submodels contained within it, as well as the connections between these process models and those developed in other areas, notably the Unsaturated Zone Flow and Transport Model, and the Coupled Processes Model.

• **Saturated Zone Flow and Transport Modeling and Analysis** **3,702** **3,081** **8,608**

Conduct analyses of new information related to the saturated zone generated by ongoing and additional testing and analysis to address key uncertainties and improve understanding of performance.

Conduct additional analyses of new information related to the saturated zone generated by ongoing testing. Revise saturated zone flow and transport process-level models and abstraction-level models that support the total system performance assessment based on newly acquired test and literature information. Perform U.S. Nuclear Regulatory Commission specified analyses, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections. Conduct needed analyses and modeling to support detailed design development.

• **Saturated Zone Testing** **5,552** **5,122** **8,411**

The database built during site characterization and throughout repository licensing and construction, and operation will be used to continually improve understanding of the performance of the saturated zone and to validate assumptions in the license application that are the basis for nuclear regulatory findings about repository system performance. Some tests in the saturated zone started during site characterization will continue until repository closure as part of either the performance confirmation program or other testing and analysis programs. Tasks include saturated zone flow testing, saturated zone radionuclide transport testing, and isotope hydrology testing.

■ **Waste Package Degradation** **21,989** **20,300** **24,036**

The objective of the work in this area is to improve the models used to predict the long-term

degradation behavior of all reference materials of construction for the waste package and drip shield as identified in the design for the license application for the proposed monitored geologic repository at Yucca Mountain. These include the reference materials identified for the waste package outer barrier, inner shell, spent nuclear fuel and high-level waste baskets, emplacement pallets, and drip shields.

• **Waste Package Degradation Modeling and Analysis . 7,696 7,800 8,313**

Conduct additional analyses of new information related to waste package and drip shield material performance. Revise waste package and drip shield degradation process-level models and abstraction-level models that support the total system performance assessment based on newly acquired test and literature information. Perform U.S. Nuclear Regulatory Commission specified analyses, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections. Conduct needed analyses and modeling to support detailed design development.

• **Waste Package Materials Testing 14,293 12,500 15,723**

The waste package material performance database built during site characterization and throughout repository licensing and construction, and operation will be used to continually improve understanding of the performance of these materials and to validate assumptions in the license application that are the basis for nuclear regulatory findings about repository system performance. Some testing will continue as part of the performance confirmation program Testing, analysis and modeling of Alloy 22 and Titanium Grade 7 to improve predictions of the relevant range of local environments they will experience in the emplacement drifts, as well as their long-term behavior in those environments will be continued.

■ **Waste Form Degradation 9,957 9,000 6,505**

The objective of the work described in this element is to improve the models used to predict the long-term degradation behavior and radionuclide mobilization of all waste forms proposed for disposal within a monitored geologic repository at Yucca Mountain. These waste forms include commercial spent nuclear fuel from both pressurized water reactors and boiling water reactors, defense high-level waste glass, U.S. Department of Energy spent nuclear fuel, and naval reactor spent nuclear fuel.

• **Waste Form Degradation Modeling and Analysis . . . 4,481 4,500 3,275**

Revise process-level models and abstraction-level models that support the total system performance assessment based on newly acquired test and literature information. Perform U.S. Nuclear Regulatory Commission specified analyses, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections. Conduct needed analyses and modeling to support detailed design development.

• Waste Package Materials Testing	5,476	4,500	3,230
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The waste form performance database built during site characterization and throughout repository licensing and construction, and operation will be used to continually improve understanding of the performance of these materials and to validate assumptions in the license application that are the basis for nuclear regulatory findings about repository system performance. This testing program will include commercial spent nuclear fuel and high-level waste glass and will help improve models of waste form degradation and radionuclide mobilization processes.

■ Engineered Barrier System Performance	14,630	10,505	18,519
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The objective of the work in this area is to improve the models used to predict the environment within the repository drifts to which the engineered barriers are exposed, how the engineered barriers (besides the waste package, drip shield, and waste form) perform within these environments, and the manner in which any radionuclides released are transported.

• Engineered Barrier System Performance Modeling and Analysis	5,852	4,202	9,408
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Conduct additional analyses of new information related to engineered barrier system performance. Areas included are the engineered barrier system thermal-hydrologic environment, coupled thermal-hydrologic-chemical processes, thermal-mechanics/drift degradation, and radionuclide transport within the engineered barrier system. Revise process-level models and abstraction-level models that support the total system performance assessment based on newly acquired test and literature information. Perform U.S. Nuclear Regulatory Commission specified analyses, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections. Conduct needed analyses and modeling to support detailed design development, including alternative design approaches that could include backfill and radionuclide getters.

• Engineered Barrier System Performance Testing . . .	8,778	6,303	9,111
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The engineered barrier system environment and material performance database built during site characterization and throughout repository licensing and construction, and operation will be used to continually improve understanding of the performance of this system and to validate assumptions in the license application that are the basis for nuclear regulatory findings about repository system performance. This testing program will further improve models of the engineered barrier system thermal-hydrologic environment, coupled thermal-hydrologic-chemical processes, thermal-mechanics/drift degradation, and radionuclide transport within the engineered barrier system.

■ Disruptive Events	8,210	8,500	11,952
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A disruptive event is defined as an event having a probability of occurrence of less than one, but more than one in 10,000 over 10,000 years. Events that have an occurrence probability equal to or greater than this, and are not excluded because of low consequence to dose, are included in the total system performance assessment analyses. The objective of the work in this area is to improve the disruptive events models: igneous eruptive, igneous intrusive, and seismic.

• Disruptive Events Modeling and Analysis	5,337	5,500	7,519
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Conduct additional analyses of new information related to potentially disruptive events. Revise process-level models and abstraction-level models that support the total system performance assessment based on newly acquired test and literature information. Perform U.S. Nuclear Regulatory Commission specified analyses, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections. Conduct needed analyses and modeling to support detailed design development, including improving understanding of seismic design bases.

• Testing to Support Disruptive Event Modeling	2,873	3,000	4,433
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The database supporting disruptive event modeling was initiated during site characterization and will continue to be developed throughout repository licensing and construction, and operation. This database will be used to continually improve understanding of the performance of the repository in response to potentially disruptive events and to validate assumptions in the license application that are the basis for nuclear regulatory findings about repository system performance. This testing program will further improve the disruptive event models.

■ Biosphere	1,431	1,606	887
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The biosphere model assesses how any radionuclides that are released from the repository and traverse the natural barriers are transported within the biosphere and the impacts (radiation dose) to the reasonably maximally exposed individual. The biosphere model addresses the characteristics of the environment that influence the transport of radionuclides and the characteristics of the receptor.

Conduct additional analyses of new information related to biosphere modeling. Revise process-level models and abstraction-level models that support the total system performance assessment based on newly acquired test and literature information. Perform U.S. Nuclear Regulatory Commission specified analyses, support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections. Conduct needed analyses and modeling to support detailed design development.

■ Neutronics	3,749	3,292	2,086
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The objective of the work in this area is to continue development and application of the disposal criticality analysis methodology. The methodology applies to all criticality related analyses needed to ensure the safety of workers and the public from the time that the waste is placed in a waste package through the time when fissile material may be transported from the waste package and accumulate in the natural system.

Interact with the U.S. Nuclear Regulatory Commission to resolve all items in the revised Disposal Criticality Analysis Methodology Topical Report for which U.S. Nuclear Regulatory Commission approval is sought. Support all necessary interactions with the U.S. Nuclear Regulatory Commission relative to criticality prescribed through the Disposal Criticality Analysis Methodology Topical Report.

■ Postclosure Test Coordination	13,004	12,273	21,885
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The activities include test management and coordination of the testing and data collection effort that support the performance confirmation data collection and data requested by U.S. Nuclear Regulatory Commission during the licensing process. Activities include field test data management; maintaining the drilling cores collected during site characterization in a controlled environment; field testing design; determination of interference evaluation; and drilling and excavation in support of field testing.

■ Performance Confirmation Support	2,079	2,061	0
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Revise the Performance Confirmation Plan to reflect regulatory changes, changes to the license application process, and the license application design. Revisions refine the Performance Confirmation Plan, in accordance with 10 CFR 63, subpart F, and affect lower tier documents. Performance confirmation is the set of activities, including monitoring, testing, and analyses, required by the U.S. Nuclear Regulatory Commission to help provide reasonable assurance that the systems will perform as described in the license application following repository closure. This effort was completed in FY 2004.

■ Technical Data Management	13,173	10,228	7,144
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Populate and maintain the technical databases which contain field data, results of laboratory tests, engineering analyses, location information, radioactive waste inventories, waste form characteristics, and data sets generated and used by the Department as input to design, performance assessment, and development of the license application.

Manage and ensure the integrity and traceability of the technical data and Program records that have been compiled to support license application and associated design and analysis activities for Yucca Mountain.

■ Yucca Mountain Site Description	1,304	891	14
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The Yucca Mountain Site Description is a comprehensive document illustrations that describes the current understanding of the geologic system at Yucca Mountain that includes information on natural analogs. It serves as a technical basis for preparing the site description portion of the license application. Work in this area is to support U.S. Nuclear Regulatory Commission hearings, address open and confirmatory items, and support U.S. Nuclear Regulatory Commission inspections.

■ Pre-Closure Safety Assessment	3,232	3,064	2,042
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This work area includes the engineering integration tasks and products necessary to continue development of the preclosure safety analysis. This includes the establishment and definition of safety requirements, and performance of safety analyses that demonstrate compliance with all applicable safety criteria. Supporting activities include: identification of preclosure safety hazards generated from internal and external hazards, evaluation of these hazards to identify event sequences, evaluation of the event sequences and their consequences, verification of compliance with dose limits, and classification of the systems, structures, and components. The preclosure safety analysis requires a joint consideration of safety measures including, but not limited to, fire protection, radiological safety, criticality safety, and chemical safety measures. The preclosure safety analysis is also integrated with the design development process.

This work area also includes the performance of U.S. Nuclear Regulatory Commission specified analyses, support to U.S. Nuclear Regulatory Commission hearings, addressing of open and confirmatory items, and support to U.S. Nuclear Regulatory Commission inspections.

■ University and Community College System of Nevada . . .	10,420	8,000	10,000
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The principle purpose of the University and Community College System of Nevada cooperative agreement work is to develop and provide the public with an independently derived, unbiased body of scientific and engineering data concerning the study of Yucca Mountain as a potential high level waste repository.

Continue to perform the testing and modeling activities in the following categories as a part of the licensing review technical basis or performance confirmation activities: Waste package material properties, waste package cladding and fabrication tasks, and engineered barrier system environments (\$4,000); unsaturated and saturated zone natural systems (\$4,000); and license support network information technology and library research (\$1,000)

Provide independent participation as needed in the Yucca Mountain repository licensing activities (\$1,000)

■ Nye County/Inyo County Technical Activities	2,500	2,500	3,000
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In FY 2005 Nye County is expected to continue with the Independent Scientific Investigation Program activities that are currently underway. These activities provide independent scientific investigation of the natural system associated with the Yucca Mountain repository area and down gradient from it. A vital part of this investigation is the early warning drilling program started several years ago. The drilling program provides data for the natural systems processes modeling of the project's saturated zone flow and transport modeling.

In FY 2005 the Inyo County will continue its program of drilling and characterization of the potential radionuclide transport pathways

■ Bureau of Reclamation/National Academy of Science	400	300	450
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Consult with the U.S. Bureau of Reclamation and National Academy of Science and fund the interagency support.

Site Operations	31,693	31,228	97,246
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This budget element encompasses the work required to provide the support systems, infrastructure, construction, utilities, and safety systems needed to support field-testing and maintain access to the site and underground research facilities at Yucca Mountain. Move and/or replace the existing surface facilities and systems located at the ESF North Pad area, including the aging electrical power substation, the existing ESF Site Operations Facilities to an area consistent with the Site Development Plan. Upgrade or replace, as necessary, potentially unsafe/obsolete equipment/systems in the ESF. Design and construct a new access road to the ESF North Pad Facility.

■ Engineering	3,237	2,851	2,028
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Coordinate the design and construction of field maintenance facilities. Establish and maintain configuration control of and upgrade, as required all Level 1 - Critical Systems. Provide designs and operational data to ensure Level 2 - Operational Systems are maintained and remain in operating order. Provide requirements to place Level 3 – Non-Operational Systems in a Cold/Dry/Inert state.

■ Construction	19,433	21,662	22,031
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The project has become concerned with the age of the ESF support equipment and the fact that it has exceeded its life expectancy. The project will initiate upgrades of the support system to make the ESF as safer working environment (all upgrades will be compatible with future long-term uses of the facility).

Move and/or replace the existing surface facilities located at the North Pad area, including the

aging electrical power substation, the existing Site Operations Facilities and the existing concrete batch plant to an area consistent with the Site Development Plan. Relocate Site Operations Facilities from the North Portal Pad to the South Portal Pad to support anticipated repository construction needs. Replace the existing 10 MW electrical power Substation 25-16 which provides utility power to the Exploratory Studies Facility surface and subsurface facilities at the North Portal, South Portal and underground tunnel complex. The Project has become concerned with the age of this equipment and the fact that it has exceeded its life expectancy. In the event of a system failure at Substation 25-16, the Exploratory Studies Facility would be without electrical power and the outage could be for a substantial period of time. Initiate long lead procurement and construction of two new 60 MW transformers (one for backup) and associated switchgear to handle projected construction loads for the repository. Initiate design studies for offsite electrical power delivery to the Exploratory Studies Facility. Provide excavation, construction and setup support for performance confirmation testing. Initiate procurement of locomotives to meet repository construction requirements. Initiate the replacement and/or upgrade the site communication system to fully meet anticipated repository needs using fiber optic technology. Prior to implementation of these construction activities, it will be necessary to confirm that all applicable regulatory conditions and approvals have been received and documented. This approach is based on the assumption that required regulatory approvals would be obtained to support the stated implementation dates.

■ **Safety Upgrades 0 0 23,500**

Initiate the upgrade or replace, as necessary, of potentially unsafe/obsolete equipment/systems in the Exploratory Studies Facility. These systems include ventilation, power distribution, water supply, compressed air supply, lighting, ground support, underground transportation, sanitation, fire protection and communications. These systems or portions of systems are classified as Level 1-Critical, Level 2-Operational and Level 3-Non-Operational. The systems, such as the rail, power supply and ventilation were built as temporary construction systems and were adequate during site characterization, but in their present condition cannot be integrated into the repository. Upgrade or replace, as necessary, the existing underground and surface Level 1 and Level 2 systems, facilities and equipment that are important to maintaining safe Exploratory Studies Facilities operation during the next several years in accordance with the site development plan needs. Upgrade the underground rail system throughout the entire Exploratory Studies Facility such that a 25 mph speed limit can be realized. Design and construct engineered controls to prevent or minimize worker health exposure from dust producing activities or ambient dust sources. Procure and deploy a real time tunnel continuous air monitoring system including monitoring for such parameters as dust, radon, oxygen, carbon monoxide, etc.

■ **Site Infrastructure Procurements 0 0 22,750**

In order to succeed in constructing the repository and Geologic Repository Operational Area in the short time between Construction Authorization (2007) and receipt and emplacement, 2010, we must start infrastructure procured and physically in place prior to Construction Authorization.

- **Construction for new OMNI 0 0 3,000**

Construction of a multi-purpose building to consolidate existing temporary facilities near the north portal. This facility will support Monitored Geologic Repository construction activities related to subsurface structures and facilities, surface waste receipt, processing, handling, and transport facilities, and Balance of Plant facilities.

- **Preliminary Earth Work 0 0 4,000**

Procurement of heavy construction equipment and initiation of activities necessary to clear the site of existing Exploratory Studies Facility tunnel muck and undocumented fill and to place structural backfill for the Monitored Geologic Repository and Balance of Plant prior to Construction Authorization. (there is approximately 4,000,000 cubic yards of material to move and compact).

- **Water Distribution 0 0 3,000**

Pre-construction evaluation and analysis of current system routing, development and incorporation of head tanks and distribution lines for future system demand and fire protection, and waste water routing for all surface and subsurface facilities.

- **Primary Power Distribution System 0 0 6,750**

Provide a new 230KV transmission line from the most probable source (Nevada Power-Northwest Switch Yard) to the Mercury substation at the Nevada Test Site and tie into the existing 138KV grid. Upgrade the current 6.9KV transmission line from the Canyon substation to a 138KV system. Provide a new 230KV transmission line from the Mercury sub-station to the Yucca Mountain Project switch yard.

- **Communication Work 0 0 1,000**

Evaluation of options for communicating through the National Nuclear Security Administration loop as opposed to direct link by commercial carrier, for the Exploratory Studies Facility, construction support, and eventual operating plant.

- **North Portal Facilities 0 0 1,000**

Upgrade of facilities to provide immediate support of Exploratory Studies Facility operations and testing, start of tunneling operations, as well as assisting with early construction activities for surface facilities.

• South Portal Facilities	0	0	1,000
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Disposition the Tunnel Boring Machine from the ESF construction and decommission/decontaminate the surrounding area. Initiate studies and preliminary drilling activities to support construction of surface building foundations.

• Surface Contractor	0	0	3,000
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Initiate procurement of surface construction contractor and qualify surface construction contractor suppliers.

■ Access Road	0	0	21,500
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Design and construct a new access road to the North Pad Facility. Prior to the implementation of the road access activity, it will be necessary to confirm that all applicable regulatory conditions and approvals have been received and documented. This approach is based on the assumption that required regulatory approvals would be obtained to support the stated implementation dates. To handle high volumes of construction deliveries and workforce commuters during the repository phase, the Department must ensure the development of a road which meets highway standards. A site access road will best serve the Program schedule if it is completed prior to Construction Authorization. The road estimate is 17 miles at one million per mile. In addition a 40 mile wash crossing route, US 95 exchange, and shaft access roads are required.

■ Maintenance	4,632	2,974	2,136
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Direct the maintenance of systems and equipment to provide a safe environment for workers, public tours, and scientists in the Area 25 facilities at the North Portal/Exploratory Studies Facility Pad, South Portal, Central Support Area, and outlying areas. Provide communication, electricity, water, sewage, refuse collection, access control, and janitorial services at the Yucca Mountain site. Control materials and property on the site and warehouse supplies. Operate the motor pool and provide bus transportation for workers and fuel for vehicles. Provide staging for underground activities and utility feeds to underground operations. Calibrate scientific equipment. Coordinate the operations for public tours of the site. Support the Facility Representative Program. Coordinate the design and construction of field maintenance facilities.

■ Operations	4,391	3,741	3,301
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Implement the Conduct of Operations Program; enforce procedures policies and processes; provides personnel to operate, control, and status facility systems and equipment; ensure a regulatory compliant transportation program is maintained; monitor, direct, and control work activities; and manage all Ranch Control activities.

Technical Alternatives	2,000	20,000	2,000
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System enhancements through technology improvements provide technical solutions and alternative technologies to assist with the design, construction, operations and closure of the repository. The activities are focused on a limited number of critical, high-payback activities where step improvements can be gained.

Alternative approaches to current high-cost baselines will be developed to: 1) contribute to efficiencies of repository operations; 2) reduce the first-costs and life-cycle costs; 3) decrease worker exposure; 4) enhance the schedule for emplacement of wastes into the repository. This program is an essential element of the Department's goal of reducing the repository life-cycle cost and increasing the rate of waste receipt and disposal, and will also include scope in alternative engineered barrier materials, robotics, and alternative handling and welding technologies.

Project Support	72,056	69,335	71,506
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This budget element encompasses the management support that enables design, technical, and scientific programs to plan for and fund the collection of data; to analyze, process, and manage it; and to compile and synthesize it into major products and decision documents. This budget element includes project control, cost estimating and planning; information management and technology systems and support; records management/document control; information management operations–network and computer operations; administrative support–mail, logistics, and facility/equipment management. It also includes Systems Engineering, Environmental Safety and Health, and compliance with the National Environmental Policy Act.

■ Project Control	5,735	5,581	5,344
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Provide baseline management, planning, scheduling, and cost estimating support to the Office of Civilian Radioactive Waste Management Program. Maintain and operate the Program's earned value management system and provide reports for both U.S. Department of Energy and contractor use. Provide estimating support for annual work plans, engineering estimates, value engineering, and life cycle cost estimates. Maintain the Program's risk management system and perform risk assessments. Project Control includes monitoring project activities to ensure compliance with applicable statutes, regulations, and department of Energy orders to ensure that Project objectives are met; monitoring project activities to ensure that they are accomplished in accordance with approved work scopes, authorized budgets and scheduled milestones.

■ Systems Engineering	7,864	10,647	7,858
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Successful application of systems engineering ensures that the performance of a geologic repository is balanced against the construction and operating costs of the repository. In FY 2005 value engineering and design evaluation studies and analysis will be done to optimize design,

construction, and operating costs. Systems Engineering also includes studies to mitigate project risks and independent verification and validation of software.

■	Information Management and Information Technology .	24,666	22,226	21,491
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Information Technology Justification – Costs are identified and described fully in the FY 2004 Exhibit 300 for Information Management steady Operations (RW-04-03).

• Information Management	4,666	4,100	3,800
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This element encompasses the provision of services to the Office of Civilian Radioactive Waste Management community in compliance with federal regulations and the requirements of the work that is being performed under the auspices of the Quality Assurance Requirements Document. This work includes records management, document development and publication, document management, procedures development and management and business process modeling.

Manage and ensure the integrity and traceability of the technical data and Program records that have been compiled to support license application and associated design and analysis activities for Yucca Mountain.

• Enterprise Architecture	3,500	3,000	2,800
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Development of the Office of Civilian Radioactive Waste Management Enterprise Architecture is essential to the successful and efficient utilization of the information technology resources procured to improve the productivity and efficiency of the human resources. Enterprise architecture is also the subject of increasing focus by U.S. Department of Energy and Office of Management and Budget, who are both interested in the formalization of the process used in the selection of investment in capital procurements. In FY 2005, the enterprise architecture will continue to ensure support for the e-government initiatives and will ensure that detailed planning beyond license application includes capital investments that have been selected through an institutionalized, documented, repeatable process.

• Information Technology	16,500	15,126	14,891
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The Information Technology element encompasses the strategic application of information technology in support of the Office of Civilian Radioactive Waste Management Program mission by providing integrated information systems, solutions and services that enhance the productivity of human resources, support business process improvement efforts, and reduce overall Program costs. Information Technology includes management of computer security programs; the design, development, implementation and maintenance of information systems; provision of a reliable and maintainable electronic infrastructure ensuring rapid, effective and timely access to information and easy communication of that information to others; assurance of the integrity, safety and security of technical, regulatory, financial, management and

administrative information; provision of automation support services to assist in the streamlining and integration of business processes to reduce the paperwork burden and increase the productivity and job satisfaction of human resources; promotion of an effective organizational culture based on planning, compliance with federal and departmental regulations, and responsiveness to Program dynamics; and supporting the collection and storage of records required in support of the license application.

Maintain existing information systems and networks. Validate Information Technology Management Strategic Plan. Revise/update Information Technology Management Multi-year plan. Develop integrate Information Technology Management Annual Planning Guidance. Conduct Information Technology short range planning and integrated information management budget planning.

Develop and maintain the Office of Civilian Radioactive Waste Management Enterprise Architecture to ensure compatibility with the Department's information architecture.

Maintain and update basic computing infrastructure and upgrade telecommunications networks. Upgrade servers and desktop computers. Upgrade office automation software and associated infrastructure.

■ **Environmental, Safety and Health** **11,197** **11,783** **15,800**

This budget element encompasses the work required in FY 2005 to provide environmental, safety, and health support necessary to protect project personnel and the environment throughout the design and pre-construction phase of the Project. Environmental monitoring and compliance began with site characterization and will continue throughout licensing, construction, operations, closure, and decommissioning of the repository.

• **Maintain Permits and Environmental Compliance** . . . **4,500** **5,086** **6,000**

Maintain compliance with federal and state environmental requirements including air quality, water quantity and quality, hazardous materials and waste management, cultural resources, Native American interactions, biological resources, land access, and support for land withdrawal.

• **Technical Support** **2,000** **2,000** **1,000**

Provide Environmental, Safety and Health support to construction and design. Pre-activity surveys, monitoring Environmental, Safety and Health parameters, and project document preparation and review to address Environmental, Safety and Health requirements are also included.

• Safety and Health Compliance	3,500	3,500	7,800
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Maintain Safety and Health Compliance. Procure emergency vehicles, associated facility (e.g., Butler building or trailer), and equipment bay necessary to deploy surface and subsurface fire fighting emergency response capability. Provide Safety and Health assistance and oversight to maintain and operate the support systems necessary to provide a safe environment for project personnel and public tours. Systems are those specified within the Site Operations element and include ventilation, power distribution, water supply, compressed air supply, lighting, ground support, underground transportation, sanitation, fire protection and communications.

• Emergency Planning/Management	1,197	1,197	1,000
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Implement Emergency Management Strategy Document, including developing the Emergency Preparedness Plan and associated procedures.

■ National Environmental Policy Act	2,539	2,507	2,478
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Provide overall technical and procedural expertise to support compliance with National Environmental Policy Act. The Nuclear Waste Policy Act of 1982 requires the U.S. Nuclear Regulatory Commission to adopt, to the extent practicable, the repository Final Environmental Impact Statement during the license application process. Complete evaluation of repository program changes affecting environmental impacts as described in the Final Environmental Impact Statement and associated baseline as well as administrative record to support U.S. Regulatory Commission adoption of the Final Environmental Impact Statement.

■ Institutional	3,875	3,645	5,740
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Provide institutional outreach and public relations, administration of public tours, and operation of the public information center. As the Office of Civilian Radioactive Waste Management proceeds with the licensing process, increased national as well as international attention will focus on the proposed repository. In order to be responsive to public, media, government, industry and interest groups, it is essential that the program provide up-to-date information on the Yucca Mountain Project. Enhancements to the Office of Civilian Radioactive Waste Management current public information program will include: significant upgrades to our three science/information centers in Nevada with museum quality exhibits, including virtual reality platforms and revamping of the Office of Civilian Radioactive Waste Management traveling exhibits' program with state-of-the-art exhibits. In addition, we will have a designer/architect conduct a needs assessment and conceptual design for a visitors' center at the Yucca Mountain site. Further we will develop a mobile science/information center with exhibits and scientific experiment capability to reach out to rural communities. An essential element of all of these enhancements will focus on the transportation program.

■ Training	3,880	3,646	3,495
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Provide quality assurance training, safety training, underground training, and policy and procedure training.

■ Lease Scoring	12,300	9,300	9,300
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Maintain current leases on office space occupied by the management and operating contractor. These leases are negotiated to carry the least lease termination liability.

External Oversight and Payments-Equal-to-Taxes	19,841	11,341	21,341
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(Community Cooperative Development)

This budget element includes funding for financial assistance to the State of Nevada, Affected Units of Local government and Payments-Equal-to-Taxes as consistent with the Nuclear Waste Policy Act of 1982. We also intend to initiate a long-term regional approach to planning and funding cooperative projects. This effort will allow local governments and development authorities in Nevada the ability to cooperate with the Program for mutually beneficial infrastructure projects and programs to support the construction and operation of repository facilities and transportation systems

Total, Yucca Mountain Project	368,261	403,625	558,943
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Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)

License

■ License Application

Writing the license application is completed in the first quarter of FY 2005. The remaining work during FY 2005 is response to technical questions that might be asked during the docketing of the license application or during the licensing proceedings.

-5,157

■ NRC Interactions

Throughout 2005 and beyond, significant work will be conducted in preparing for and participating in the licensing proceedings. The U.S. Nuclear Regulatory Commission is expected to issue a final decision on a construction authorization for the repository in three years. Therefore, the Department must aggressively prepare and present its defense of the license application. This includes addressing all issues presented regarding contentions, participating in discovery, preparing and providing testimony, and appearing at licensing proceedings. There are expected to be multiple Licensing Boards established for the process, multiple intervenors, and several hundred or more contentions filed. It is expected that a large number of contentions will be filed by potential parties. During the initial 5 months after docketing the license application the Atomic Safety and Licensing Board is scheduled to rule on admission of parties and admitting contentions. Additionally, discovery, including depositions will begin. Successful defense of the DOE's positions on these issues will require significant technical and administrative support.

After submittal of the License Application (LA) early in FY 2005, the NRC will perform an acceptance review of the LA. Following a successful acceptance review, the LA will be docketed and the detailed NRC technical review will start. The U.S. Department of Energy will be subject to additional regulatory requirements as an applicant. It is anticipated that the acceptance review may result in some areas where the NRC determines additional information is required, although still acceptable for docketing. Licensing and technical project resources will be required for timely response to any such areas identified by the NRC. As a result of the NRC technical review of the LA, it is anticipated that NRC will request additional information in some areas, and require timely responses which allow NRC to complete their review in the allotted time. Responding to such requests requires intensive management attention, coordination, and facilitation by licensing personnel, and use of technical

FY 2005 vs. FY 2004 (\$000)

resources in the areas addressed by the request. It is also anticipated that there will also be the need for technical meetings to clarify the information presented in the LA, and to clarify requests for additional information and the project responses.	+7,391
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■ **Licensing Support Network (LSN)**

Completing the population and certification of the Licensing Support Network in June, 2004 completes the major portion of the Licensing Support Network. Work will continue to add new documents as they are completed and the re-certification immediately prior to the submission of the license application will be required during FY 2005. Need to respond within five days to any directed additions to OCRWM holdings in the LSN.	-11,830
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■ **Licensing, Regulatory, and Legal Support**

The increase is due to the increases requirements for specialized regulatory and legal support for the licensing process.	+7,000
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■ **Licensing Docket Support**

With the completion of the Licensing Support Network and the submission of the license application, the focus will shift to the development, population and maintenance of the DOE's submittals to the NRC's Electronic Hearing Docket. This will require significant effort throughout FY 2005 and beyond. The Electronic Hearing Docket will be the official record of the proceedings of the licensing process.	+3,900
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■ **Commitment Management**

The decrease is related to maintaining the database for identifying, tracking, and managing the Department's commitments, comments, and decisions.	-884
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Total, License	<hr/> +420
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Repository Facilities

■ **Subsurface Facilities**

The majority of the increase in this budget element for FY 2005 is due to the initiation of procurement activities in preparation for underground excavation	+31,010
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FY 2005 vs. FY 2004 (\$000)

(+20,000). The remaining increase is due to the development of the preliminary design for subsurface facilities (+11,010).

■ **Surface Facilities**

The increase is due to the development of the preliminary design for surface facilities and design of the training and test facility. +34,903

■ **Engineering Barriers**

Development of the design specifications and procurement of the first Waste Package and pallet prototype, is required to demonstrate waste package handling, welding, testing, and stress mitigation in the surface facilities. +3,712

Total, Repository Facilities **+69,625**

Safety Analysis

The overall element increased due to the majority of the addition to this budget element of the Technical Alternative activities from FY 2004. These activities will be performed within the subelement categories within this budget element in FY 2005. In addition, long term testing associated with the Performance Confirmation Plan (Unsaturated Zone and Saturated Zone Flow and Transport, Waste Package Degradation, Engineered Barrier System Performance, Disruptive Events, Postclosure Test Coordination) increased slightly. +25,084

Total, Safety Analysis **+25,084**

Site Operations

■ **Engineering**

The decrease is due to reduced cost of the field maintenance facilities. -823

■ **Construction**

The increase is related to the continued upgrade of the existing surface facilities. +369

■ **Safety Upgrades**

The element increase in FY 2005 is due to the necessity to upgrade or replace +23,500

FY 2005 vs. FY 2004 (\$000)

some of the underground systems in the Exploratory Studies Facility. The systems, such as the rail, power supply, and ventilation systems, were built as temporary construction systems and were adequate during site characterization.

■ Site Infrastructure Procurements

In order to succeed in constructing the repository and Geologic Repository Operational Area in the short time between Construction Authorization (2007) and receipt and emplacement, 2010, we must have all infrastructure procured and physically in place prior to Construction Authorization. This includes construction for a new OMNI, Preliminary Earth Work, Water Distribution, Primary Power Distribution System, Communication Work, North and South Portal Facilities, Surface Constructors.

+22,750

■ Access Road

Design and implement contracting to construct a new access road to the Yucca Mountain site.

+21,500

■ Maintenance

Reduced cost required to maintain systems and equipment in the Area 25 facilities.

-838

■ Operations

Reduced requirements for the implementation of the Conduct of Operations Program.

-440

Total, Site Operations	+66,018
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Technical Alternatives

The decrease in fiscal year 2005 is due to the transfer of the majority of the workscope into the Safety Analysis budget element. This effort evaluates alternative approaches to improve efficiencies of repository operations, reduce the life cycle costs, decrease worker exposure, and enhance the schedule for emplacement wastes into the repository.

-18,000

Total, Technical Alternatives	-18,000
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FY 2005 vs. FY 2004 (\$000)

Project Support

The increase in fiscal year 2005 is due to enhancements and upgrades of the three Science /Information centers in Nevada.	+2,171
Total, Project Support	+2,171

External Oversight and Payments Equal-to-Taxes

Provide funding to the State of Nevada and Affected Units of Local Government for oversight of activities related to the development of the license application and the design of a repository at Yucca Mountain. We also intend to initiate a long-term regional approach to planning and funding cooperative projects. This effort will allow local governments and development authorities in Nevada the ability to cooperate with the Program for mutually beneficial infrastructure projects and programs to support the construction and operation of repository facilities and transportation systems.	+10,000
Total, External Oversight and Payments Equal-to-Taxes	+10,000

Total Funding Change, Yucca Mountain Project	+155,318
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Transportation

Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Transportation ^a					
National Transportation	7,348	43,830	163,000	+119,170	+271.9%
Nevada Transportation	0	17,928	23,000	+5,072	+28.3%
Project Management	600	1,800	0	-1,800	-100.0%
Total, Transportation	7,948	63,558	186,000	+122,442	+192.6%

Description

The mission of the Yucca Mountain Project is to manage and dispose of high-level radioactive waste and spent nuclear fuel in a manner that protects public health and safety, and the environment; enhances national and energy security; and merits public confidence.

Benefit

National Transportation

The National Transportation Project provides for the receipt of spent nuclear fuel and high-level waste from generators/owners and transporting it across the country to the Yucca Mountain site.

Nevada Transportation

The Nevada Transportation Project provides the acquisition of an inter-modal transfer facility and/or a new rail spur, within the State of Nevada, from existing rail lines to the Yucca Mountain site as well as acquiring needed permits, licenses, and land.

^a FY 2003-2004: The "Waste Acceptance, Storage and Transportation" program element changed to "Transportation" in FY 2005. The "Waste Acceptance" element in FY 2005 has been incorporated into the "Program Management & Integration" program element. The "Project Management" activity in FY 2003-2004 was incorporated into the "National Transportation" and "Nevada Transportation" elements in FY 2005.

FY 2005 Objectives

The national rail system has been used for the last 25 years to ship radioactive waste safely across the country. However, no rail link exists between the national rail system and the Yucca Mountain site. Should DOE decide on shipping mostly by rail, the Program would build a branch rail line between the existing rail system and Yucca Mountain. In FY 2005 the Program will complete the conceptual design process, initiate the preliminary design process, issue the draft Environmental Impact Statement (EIS) for the rail alignment, hold public hearings on the draft EIS, and initiate the land acquisition process.

To develop a system ready to begin shipping waste in 2010, the Program will accelerate efforts that were delayed during the site characterization period. The main focus in FY 2005 will be to begin the procurement of truck and rail transport casks and associated equipment for the transport of both civilian SNF and DOE-owned SNF and HLW. In addition, in FY 2005 the Program will continue to develop the necessary cask fleet management capacity to support ongoing shipping campaigns by finalizing the conceptual design. Ongoing planning to prepare for initial transportation campaigns will continue in FY 2005, including ongoing work with the Office of Environmental Management on schedules for transportation of government-owned SNF and HLW. Development of operational protocols, site servicing plans, and procedures for both commercial and DOE facilities will also continue.

Under the Nuclear Waste Policy Act the Department is also directed to provide training assistance to states through whose jurisdictions shipments will be made to Yucca Mountain. Beginning in FY 2005 the Program will determine preliminary transportation routes and engage State and Tribal governments in dialogue regarding the Department's plans. Continued implementation of the NWPA Section 180(c) planning and base grant making process will be an important component of this engagement. In order to help address issues related to the transportation of radioactive waste and to provide information to the public and solicit feedback, the transportation activity also involves cooperative agreements and/or interactions with organizations representing state, Tribal, local, professional, technical, university, and industry interests.

Detailed Justification

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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National Transportation	7,948	43,830	163,000
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To begin shipments in 2010 requires the Department to develop and operate the transportation system for the initial shipments to Yucca Mountain. In FY 2005, Program activities will focus on the procurement of rail and truck transportation casks and associated equipment, increased institutional interactions regarding transportation routes, and issuance of rail alignment draft Environmental Impact Statement and other activities in preparation for construction of the Nevada rail line.

■ Fleet Equipment Acquisition	2,000	30,800	137,000
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(dollars in thousands)

FY 2003	FY 2004	FY 2005
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To build on the success of the procurement process in the previous year, the Program will begin the procurement of additional truck and rail casks and associated specialized equipment in FY 2005. These procurements are necessary to meet the goal of transporting waste at currently planned rates to the repository. These casks are scheduled to be delivered by 2009 and will support the Program goal for an initial receipt rate of 400 MTU at the repository in 2010. Current Program plans are considering whether to have the Nevada rail line ready for operations in 2010, with a contingency for truck transport should rail line construction be delayed.

■ Fleet Support	2,848	6,000	26,000
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Multiple activities will be undertaken to support development of a transportation system to support shipment of SNF and HLW in 2010. Fleet support funds in FY 2005 support full-scale cask tests by the NRC at Sandia National Laboratory, expanded institutional interactions, increased system analysis and planning, and expanded project management to support ongoing procurements. Institutional activities include support for ongoing cooperative agreements, further implementation of NWPA Section 180(c), consultation with State and Tribal governments on designation of preliminary transportation routes, and establishment of university-based regional information centers. Planning and analysis activities include preparation of documentation for Critical Decision-2/3, analytical studies of sabotage and security issues, development of quality assurance plans for cask acquisition, and a study to enhance the disposability of dual purpose canisters.

• NRC Package Performance Testing	0	0	14,000
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Provides funds to facilitate full-scale transportation cask tests. The funds will allow for the refurbishment of the existing test facilities at Sandia to develop the capabilities to handle current generation (125 ton) large rail casks, and allow for the testing of these casks to simulate an impact up to 90 miles per hour. This would require major renovations to the facility to allow for the cask to be dropped from an elevation of approximately 270 feet. The facilities for the performance of the fire test would also require modifications to allow for the testing of these larger casks. This funding also allows procurement of two (one truck and one rail) full-sized test casks. The NRC's performance of full-scale cask test to enhance public confidence in the NRC cask certification requirements is crucial to public acceptance of the Program's transportation activities.

• Institutional	1,048	5,000	5,000
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The Program will support expanded institutional interactions through cooperative agreements with numerous regional groups, implementation of NWPA Section 180(c). Funding will support institutional relations activities with regard to establishing preliminary transportation routes, notification, protocols, and safeguards and security. Specifically, interact with affected units of local governments regarding the proposed mode of transportation through Nevada and regarding the proposed Nevada rail corridor.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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Includes funding for cooperative agreements with regional groups, including Council of State Governments – Eastern Office, Council of State Governments – Midwestern Office, Southern States Energy Board, Western Interstate Energy Board, National Association of Regulatory Utility Commissioners, National Council of State Legislatures, the funding of the Transportation External Coordination Working Group, and consultations with Native American Tribal groups.

Continue implementation of NWPA Section 180(c) through ongoing dialogue with state and local governments regarding preliminary route selection and emergency preparedness and response planning. Prepare for planning and base grant making activities to begin in FY 2007.

• **Planning/Studies/Logistics 1,200 1,000 5,000**

Support ongoing and expanded planning analytical activities to support decision-making and transportation operations. Complete all the necessary documentation to support Critical Decision-2/3 for the fleet management facility approval of the performance baseline and to allow issuance of the request for proposal for design/build services. Develop quality assurance plans and requirements for supporting transportation fleet acquisition activities. Perform vendor audits as required to meet NRC requirements. Continue work with DOE Office of Environmental Management on development of integrated schedule for delivery of DOE and Navy SNF and HLW. Undertake studies and analyses to enhance the disposability of dual-purpose canisters (those used for both storage at utility or DOE sites and for transport) in the geologic repository. Conduct analytical work related to sabotage and security issues related to spent fuel transportation. Most work will likely be conducted at DOE laboratories in collaboration with U.S. NRC, and British, French, and German entities.

• **Project Management 600 0 2,000**

Provide cost, schedule, planning, and integration related tools and services: cost and schedule baseline management; strategic and program plan development/update; and project management documentation. Provide project control functions by monitoring cost, schedule and technical performance, performing variance analyses, and developing and implementing corrective actions.

■ **Fleet Management Infrastructure 0 1,000 0**

In FY 2004, performed a final evaluation of the cask maintenance options and selected an option. A site was selected for the facility and a conceptual design for the fleet management facility was completed.

■ **Operations 3,100 6,030 0**

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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This budget sub-element no longer exists. Scope of work described in FY 2004 budget request is now included under “Fleet Support” described above.

Nevada Transportation	0	17,928	23,000
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Should DOE decide to build a branch rail line in Nevada, there are several activities that will occur in order to meet the 2010 operational deadline. This would include developing the capability to bring rail casks to the site on a new branch rail line ranging in length from 98 to 323 miles. Therefore, conceptual, preliminary and final design, constructing and testing the rail line, including all ancillary structures such as bridges, tunnels, etc. would need to be accomplished. Land for this possible new rail line would need to be acquired through a right-of-way reservation or through an administrative land withdrawal.

Activities in FY 2005 include the following:

- Complete conceptual design
- Initiate preliminary design and issue RFP for final design/bid/build services
- Issue draft rail alignment environmental impact statement and hold public hearings

■ Rail Line	0	13,628	15,000
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Construction of a possible rail line through Nevada is necessary to meet annual shipment and receipt rate goals for the repository. While construction is not scheduled to begin until FY 2008, funding support for land acquisition and engineering and design activities is necessary now so that construction can begin when construction authorization for the repository is issued.

• Conceptual Design	0	0	2,000
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Complete the conceptual design of the transportation system within Nevada. Meeting this schedule is necessary to achieve completion of Nevada rail.

• Preliminary Design	0	0	11,000
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In FY 2005, initiate preliminary design following Critical Decision-1, Approve Preliminary Baseline. Prepare and issue a request for proposal for final design/bid/build services for the Nevada rail line. Start of preliminary design is critical to enabling start of construction of the rail line upon the issuance of the construction authorization for the repository.

• Land Acquisition	0	1,600	2,000
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Complete application process for right-of-way or land withdrawal and submit to BLM for processing. Continue development of the case file for anticipated submittal to BLM to FY2007 as final support and documentation for the right-of-way or land withdrawal application.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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- **Nevada Rail Conceptual Design and Critical Decision Support** **0 11,128 0**

The budget sub-element is no longer in use. Work scope described in FY 2004 budget request is now included in “Conceptual Design” above.

- **Nevada Rail Geotechnical Field Surveys** **0 900 0**

This budget sub-element is no longer being used. Scope of work described in FY 2004 budget request is now included in “Conceptual Design” above.

- **Nevada Transportation Support** **0 4,300 8,000**

Includes all planning and integration, regulatory analysis and evaluation, operations testing and certification, and project management for the Nevada Transportation project. This element also includes activities for an independent Environmental Impact Statement Contractor to initiate and continue activities related to the rail alignment Environmental Impact Statement.

- **Environmental Impact Statement** **0 0 5,400**

Under an independent EIS contractor, in FY 2004 conducted scoping meetings, and began development of the Draft Rail Alignment Environmental Impact Statement. This element was originally funded under Program Direction dollars in FY04, but was moved to operating dollars in FY05.

In FY 2005, funding supports issuance of the rail alignment draft Environmental Impact Statement and the conduct of the public hearing process. Collect and respond to public comments. Begin additional analyses as needed to support the Final Environmental Impact Statement and the Record of Decision, scheduled for FY 2006.

- **Environmental Impact Statement Technical Support** **0 0 600**

In FY2004, in support of the EIS contractor, technical feeds such as possible rail alignment options, conceptual design, geographical information systems support, including development of maps, and land use assessments were developed. Photogrammetry information was used to develop various alignment options for consideration during the scoping meetings.

In FY 2005, funding supports additional technical information needed for the draft Environmental Impact Statement and supporting the conduct of the public hearing process. Conduct additional analyses as needed to support the Final Environmental Impact Statement and the Record of Decision, scheduled for FY 2006.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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- **Project Management** **0** **0** **2,000**

Develop total program cost estimate and associated schedule for Nevada rail to support procurement of a design/bid/build contractor. Provide project planning and documentation for Nevada rail to support final design, construction, and operations. This funding-level is required for early procurement and follow-on activities, including increased work scope, cost, schedule and technical performance monitoring and analysis. In FY 2005, this work would also support Critical Decision-1 documentation development.

- **Nevada Rail Obtain Environmental Permits** **0** **400** **0**

This budget sub-element is no longer being used. Scope of work described in FY 2004 budget request is now included in “Environmental Impact Statement Technical Support” above.

- **Nevada Rail Quality Support** **0** **300** **0**

This budget sub-element is no longer being used. Since commercial industry standards for Quality Assurance in building a railroad will be followed, this scope of work described in the FY 2004 budget request is now included in “Conceptual Design” above.

- **Nevada Rail NEPA Documentation and Interactions Support** **0** **3,200** **0**

This budget sub-element is no longer being used. Scope of work described in FY 2004 budget request is now included in “Environmental Impact Statement Technical Support” above.

- **Nevada Rail Environmental Field Survey Support.** **0** **400** **0**

This budget sub-element is no longer being used. Scope of work described in FY 2004 budget request is now included in “Environmental Impact Statement Technical Support” above.

Total, Transportation	7,948	63,558	186,000
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Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)

National Transportation

■ Fleet Equipment Acquisition

The significant increase in funding in FY 2005 will fund the initial procurement of truck and rail casks and auxiliary equipment to support initial waste shipments in 2010. Full funding for the acquisition of existing cask systems is necessary in FY 2005 to allow the initiation of cask fleet procurement, which will facilitate waste acceptance in the post-2010 time-frame. The purchase of transportation cask systems including buffer and escort cars and site-specific service equipment will permit the Program to meet waste acceptance goals currently planned for 2010, and will also allow the Program to engage in limited truck shipments if the rail line is not yet available in 2010. The increase in funding also supports a significant increase in institutional interactions, including consultation on preliminary transportation routes, implementation of NWPA Section 180(c), and establishment of university-based regional information centers, as well as studies and analyses to enhance the disposability of dual-purpose canisters and analytical work related to sabotage security issues with regard spent fuel transportation. . . .

+106,200

■ Fleet Support

The increase is related to multiple activities undertaken to support the development of a transportation system to support shipment of SNF and HLW in 2010.

+20,000

■ Fleet Management Infrastructure

Final evaluation of the cask maintenance option completed in FY 2004.

-1,000

■ Operations

This budget sub-element was eliminated in FY 2005.

-6,030

Total, National Transportation

+119,170

FY 2005 vs. FY 2004 (\$000)

Nevada Transportation

In FY 2004, the Program initiated the development of a rail line from the national rail system to Yucca Mountain. Increased funding in FY 2005 supports completion of the conceptual design and Critical Decision-1 documentation, the issuance of the draft Environmental Impact Statement and associated public hearings, initiation of preliminary design activities, and continuation of land and right-of-way acquisition activities.

+5,072

Total, Nevada Transportation

+5,072

Project Management

This activity was incorporated into the “National Transportation” and “Nevada Transportation” elements in FY 2005.

-1,800

Total, Project Management

-1,800

Total Funding Change, Transportation

+122,442

Program Management & Integration

Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Program Management					
Quality Assurance	6,918	10,350	15,000	+4,650	+44.9%
Program Management and Control	655	1,088	1,863	+775	+71.2%
Audits and Reports	0	0	567	+567	+100.0%
Public Information and Education	1,501	1,485	750	-735	-49.5%
Human Resources Support	30	29	40	+11	-37.9%
Baseline Management	0	0	300	+300	+100.0%
Information Management	3,991	3,944	6,334	+2,390	+60.6%
Total, Program Management	13,095	16,896	24,854	+7,958	+47.1%
System Integration					
System Engineering	0	0	3,500	+3,500	+100.0%
System Analysis	3,563	3,483	6,930	+3,447	++99.0%
Total System Life Cycle Cost	0	0	800	+800	100.0%
Waste Acceptance	1,500	6,300	5,550	-750	-11.9%
Regulatory Coordination	913	900	3,500	+2,600	+288.9%
Program & Policy Integration	1,187	1,171	1,500	+329	+28.1%
Total, System Integration	7,163	11,854	21,780	+9,926	+83.7%
International Waste Management					
International Waste Management	933	918	933	+15	+1.6%
Total, International	933	918	933	+15	+1.6%
Total, Program Management & Integration . . .	21,191	29,668	47,567	+17,899	+60.3%

Description

The Program Management and Integration activity provides strategic direction, guidance, integration, and planning, quality assurance, budgeting, and management support to the Yucca Mountain Project and Transportation Project in executing the Program's mission. This subprogram leads the OCRWM implementation of the President's management agenda.

Benefits

The technical, management, and administrative support provided are critical to meeting the primary mission of the Program, including integrating the OCRWM System and verifying compliance with regulatory and technical requirements; providing analysis for the Total System Life-Cycle Cost (TSLCC) and Fee Adequacy; coordinating all regulatory interactions between the Department and external organizations, including licensing, Environmental, Safety and Health, and the Nuclear Environmental Protection Agency (NEPA); establishing Program-level regulatory policy, licensing strategy and requirements related to Safeguards and Security; perform strategic planning activity; and provide expert input for the OCRWM international program planning, management, and policy development for institutional, organizational and program activities.

Program Management

Quality Assurance

The Quality Assurance element identifies and ensures implementation of federally (NRC) mandated requirements for Nuclear Quality Assurance (QA) applicable to the Civilian Radioactive Waste Management System (CRWMS) program activities related to radiological health and safety and waste isolation. It establishes and maintains a Quality Assurance Program formulated to ensure quality in activity planning and performance through the developed end-products. Documented compliance with these quality requirements establishes confidence in the effective implementation of the CRWMS program to support the execution and eventual licensing and/or certification of high-level nuclear waste operation activities.

Activities associated with the QA function are performed by personnel not associated with the performer organization (NRC independence requirements), and are directly related to the acceptability of the technical products and services provided by the performer organization. The Quality Assurance element achieves this independence by requiring the Program's Management and Operations contractor (M&O) to establish a Quality Assurance organization, independent of the line functions, to support achievement of quality in M&O products, services and activities. Further independence (as required by NRC regulation) is achieved by utilizing a DOE Quality Assurance support contractor responsible for establishment/maintenance of DOE Quality Assurance Requirements and Policy to be implemented by the M&O and other participants and by performance of independent oversight (audits, surveillance, and reviews) of M&O and other participant products, services, and activities. Quality Assurance is not an administrative function, but rather a necessary step (per NRC regulation) to assure technical acceptability and confidence in fulfilling our mission to protect the public, workers, and the environment.

Program Management and Control

The Program Management element provides the basis for prioritizing, and allocating resources; defining, costing, and executing work scope and schedules; and monitoring, analyzing, and reporting Program performance. The key components of this element are business and management center planning, formulating and executing budgets and annual work plans, establishing Program-level cost and

schedule, baseline and baseline management, and capital asset management, including implementation of DOE 413.3-1 policies. Implementation of an appropriate investment strategy and the prudent management of the Nuclear Waste Fund investment portfolio are also essential to fulfilling the Program's fiduciary responsibility under the Nuclear Waste Policy Act.

Provide management and technical support to the Program and project-level Change Control Boards (CCB) to develop and process changes to the Program and project baselines and related control documents to support LA.

Audits and Reports

The Audits and Reports element includes diverse activities that support the Program's mission and ensure compliance with legislative requirements to: (1) develop and submit an Annual Report to Congress; (2) develop and submit audited financial statements to the Department's Chief Financial Officer, (3) develop and submit the Annual Assurance Memorandum to the Secretary; and (4) develop and submit to Congress, OMB and GAO, Departmental responses to recommendations in GAO and DOE IG audit reports.

Public Information and Education

The Public Information and Education includes diverse activities that support the Program's mission and ensure compliance with legislative requirements to: (1) develop and submit an Annual Report to Congress; (2) develop and submit audited financial statements to the Department's Chief Financial Officer, (3) develop and submit the Annual Assurance Memorandum to the Secretary; and (4) develop and submit to Congress, OMB and GAO, Departmental responses to recommendations in GAO and DOE IG audit reports. Implementation of an appropriate investment strategy and the prudent management of the Nuclear Waste Fund investment portfolio are also essential to fulfilling the Program's fiduciary responsibility under the Nuclear Waste Policy Act. Maintenance of the OCRWM Home Page and issuance of *The OCRWM Enterprise*, a semiannual Program newsletter, support the Nuclear Waste Policy Act objective of keeping the public informed of Program activities, and assist in building customer, stakeholder, and public confidence in and support for the Program. The Program's Historically Black Colleges and Universities Undergraduate Scholarship and Radioactive Waste Management Graduate Fellowship Programs support the Department's compliance with Executive Order 12677 and the Secretary's science education initiative, as well as ensuring that the Program's goal for a diversified workforce of highly specialized scientists and engineers will be met in the future.

Human Resources Support

The Program's Minority Educational Institution support the Department's compliance with Executive Order 12677 and the Secretary's science education initiative, as well as ensuring that the Program's goal for a diversified workforce of highly specialized scientists and engineers will be met in the future.

Baseline Management

Develop, implement, and maintain the OCRWM baseline management plans and procedures; develop Configuration Management training and lessons plans; operate and maintain the OCRWM-wide

Configuration Information System; support Program Change Control Board activities; provide data handling for all control board levels; monitor lower-level boards' activities; operate and maintain the Automate Requirements Management System database; develop, implement, and maintain the conformance verification program; and develop and implement procedures for control and distribution of Program-level documents.

Information Management

The Information Management element encompasses the strategic application of information technology (IT). It supports the accomplishment of the Program's mission by providing integrated information systems, solutions and services that enhance the productivity of human resources, drive business process improvement efforts, and reduce overall Program costs and Departmental initiatives. Information management includes computer security; designing and developing information systems to ensure a reliable infrastructure for effective and timely access to, and communication of, information; integration and integrity of technical, regulatory, management, and financial information; streamlining Program work processes through automation to reduce the paperwork burden and increase the productivity and job satisfaction of human resources; promoting an organizational culture based on planning, compliance with Federal and Departmental regulations, and responsiveness to Program dynamics; and supporting the collection and storage of records required for licensing.

System Integration

System Engineering

The systems engineering element manages the integration of the project components through integration of baselines, procedures and the system requirements hierarchy. The systems engineering element manages all program-level technical baseline change control board activities and monitors project-level technical baseline control board activities. This element establishes, maintains and documents interface control agreements at the program level between program elements and external waste generators to ensure compatibility among interfacing design features. System engineering ensure through development and management of technical baseline requirement documents that all program policies and applicable external agency requirements are considered by each project.

System Analysis

This element conducts systems studies, tradeoff studies, sensitivity studies, and contingency analyses to ensure that the system-wide impacts of system alternatives or proposed changes are considered; and alternative or contingency system configurations and concepts are analyzed. This element conducts systems logistic studies, and systems optimization and waste stream analyses.

Total System Life Cycle Cost

This element annually determines the adequacy of the fee charged to generators of commercial spent nuclear fuel (SNF), in accordance with the Nuclear Waste Policy Act of 1982. Periodically, the Department's recommendation requires the conduct of Total System Life-Cycle Cost (TSLCC) analyses

to support the decision of whether program revenues are sufficient to cover the cost of the program. The total system life cycle cost estimates are used as a basis for calculations of the defense share outstanding balance and as the reference case for systems analyses cost impacts studies. In addition, this element supports Independent Cost Estimate (ICE) reviews and the reconciliation process for updating the total system life cycle costs.

Waste Acceptance

The management of waste acceptance was previously part of the Office of Waste Acceptance, Storage and Transportation. Following a reorganization in FY 2003, waste acceptance activities are now part of the Office of Systems Analysis and Strategy Development. Its function is to develop and implement a waste acceptance system to accept the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW) to a repository at Yucca Mountain by 2010. The project manages the contracts and interfaces between the Department of Energy and the commercial waste generators to accept SNF in exchange for a fee and agreements and interfaces with the other DOE offices that require the disposal of DOE-owned SNF and HLW. This element also establishes, maintains and documents the waste acceptance criteria for all spent nuclear fuel and high level waste.

Regulatory Coordination

The regulatory coordination element ensures that the activities leading to the final Waste Acceptance system are consistent with the regulatory guidance provided by the governing authorities. This element ensures project activities are consistent with Departmental policy, environmental impact statements for other Department programs and governing NRC and EPA regulations. The focus is on plans and strategies for compliance with applicable statutes and regulations. This element also develops and manages increased focus on the program's safeguard and security regulatory strategic approach in support of the licensing and operations of the repository and transportation systems. The mission is to address a range of safeguards topics such as safety basis, integrated design-basis threat, vulnerability assessments, risk informed approaches and evolving NRC concerns.

Program and Policy Integration

The Program and Policy Integration element supports the Director's program planning requirements by integrating policy direction received from the Administration, Congress, and the Office of the Secretary into an overall program strategy. This strategic planning through front office support also provides funding for responses to program inquiries and links requirements with external program oversight parties and liaison activities within the Department.

International Waste Management

One of the key goals of OCRWM is to maintain its global leadership position in radioactive waste management areas and demonstrate that geologic disposal is the most effective option for closure of the nuclear fuel cycle. The International Waste Management element implements DOE and OCRWM policies to: support international initiatives beneficial to DOE and the Program; leverage Program activities with other national repository programs; and promote international understanding and consensus on radioactive waste management issues of mutual interest.

Detailed Justification

(dollars in thousands)

	FY 2003	FY 2004	FY 2005
Program Management	13,095	16,896	24,854
■ Quality Assurance <ul style="list-style-type: none"> • Provide in-process (i.e., during product development) quality assurance support to ensure Nuclear Regulatory Commission quality assurance requirements are appropriately incorporated into technical products. • Support quality assurance interface within the Program and external to the Program with other DOE high-level waste producing entities. • Support the maintenance of the Office of Civilian Radioactive Waste Management (OCRWM) quality assurance program and independent oversight of work performance. 	6,918	10,350	15,000
■ Program Management and Control <ul style="list-style-type: none"> • Improve program and project management systems. Maintain program management policy document, and support implementation of new Departmental project management policy and requirements. • Formulate and execute Program budget and annual work plans. • Establish Program-level cost and schedule baselines and monitor and report the Program baseline performance. • Manage the Nuclear Waste Fund investment portfolio by providing monthly investment instructions to the CFO for implementation. • Provide management and technical support to the Program and project-level Change Control Boards (CCB) to develop and process changes to the Program and project baselines and related control documents to support the license application. 	655	1,088	1,863
■ Audits and Reports <p>Develop reports and other documents required by Congress or the Department, such as the Program's Annual Report to Congress, audited financial statements, annual Federal Managers' Financial Integrity Act (FMFIA) report, responses to General Accounting Office (GAO) and DOE IG audit recommendations, and Freedom of Information Act (FOIA) requests.</p>	0	0	567

■	Public Information and Education	1,501	1,485	750
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Develop reports and other documents required by Congress or the Department, such as the Program’s Annual Report to Congress, audited financial statements, annual Federal Managers’ Financial Integrity Act (FMFIA) report, responses to General Accounting Office (GAO) and DOE IG audit recommendations, and Freedom of Information Act (FOIA) requests. Manage the Nuclear Waste Fund investment portfolio by providing monthly investment instructions to the CFO for implementation. Comply with executive orders and support the Department’s education initiatives by conducting a Historically Black Colleges and Universities (HBCU) Undergraduate Scholarship Program and the Radioactive Waste Management Graduate Fellowship Program. Provide Program information to customers/stakeholders/public through the OCRWM Home Page.

■	Human Resources Support	30	29	40
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- The Program’s Minority Educational Institution support the Department’s compliance with Executive Order 12677 and the Secretary’s science education initiative, as well as ensuring that the Program’s goal for a diversified workforce of highly specialized scientists and engineers will be met in the future.
- Purchase needed supplies, non-computer equipment, publications, and services.

■	Baseline Management	0	0	300
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Develop, implement, and maintain the OCRWM baseline management plans and procedures; develop Configuration Management training and lessons plans; operate and maintain the OCRWM-wide Configuration Information System; support Program Change Control Board activities; provide data handling for all control board levels; monitor lower-level boards’ activities; operate and maintain the Automated Requirements Management System database; develop, implement, and maintain the conformance verification program; and develop and implement procedures for control and distribution of Program-level documents.

■	Information Management	3,991	3,944	6,334
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- Maintain existing information systems and networks for facilities in the Washington, DC metropolitan area; validate Information Management (IM) strategic plans; support enterprise architecture development and management efforts; revise/update IT initiative plans and information; develop integrated annual planning guidance for IT capital investments; conduct short-range IM planning and integrated IM budget planning.
- Manage Program records, providing for the scanning and tracking of all incoming mail to OCRWM HQ. This includes the establishment of a software solution for scanning hardcopy mail into the electronic records management system.

- Support cyber security management, Homeland Security, and disaster recovery requirements; perform real time tests of existing disaster recovery plans; develop reports and coordinate with OCRWM contractors and organizations; incorporate off-site redundant backup as part of a disaster recovery program.

System Integration	7,163	11,854	21,780
■ System Engineering	0	0	3,500

Systems analysis manages the integration of the project components through integration of baselines, procedures and the system requirements hierarchy. Systems Analysis manages all program-level baseline change control board activities and monitors project-level baseline control board activities. Some specific FY 2005 activities include:

Review and receive DOE approval of Yucca Mountain CD-2 baseline in FY 2005;

Assess design documentation, requirements management, configuration management to achieve successful start of construction after successful NRC LA review;

Conduct studies to identify areas of strengths and weakness to be addressed in amendments to receive the construction authorization, and receive and possess from NRC;

Examine regulatory impacts of EM waste for classification activities;

Evaluate impacts of transportation cask designs and loading options, including implications for and optimization of repository surface facilities; and

Conduct manufacturing technologies systems studies.

■ System Analysis	3,563	3,483	6,930
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System analysis activities emphasize resolving cross-cutting issues that impact the entire Waste Acceptance system, i.e., not limited to single Project issues. Analyses address issues that provide for system optimization via parametric modeling or analysis of the system. Examples of these analyses assist the Projects, as needed, with waste stream and modeling issues, and provide the design basis waste information to the Projects. Some activities include to:

Conduct integrated systems analyses of waste holders, transportation and repository operational capabilities for optimization of systems operations in 2010 and beyond.

Refine waste stream assumptions in post-license application designs (after 20 percent completion stage) and assess impacts;

Assess impacts and develop mitigation plans for cask, waste packages, and transportation component availability for the system;

Evaluate systems implications of initiatives coming from the Science and Technology program.

Conduct systems studies, support value engineering studies, perform tradeoff studies, sensitivity studies, and contingency analyses to support national transportation planning and repository license application defense; and

Examine optimization of thermal load discussing benefit/costs to the overall DOE Waste Acceptance system.

■ **Total System Life Cycle Cost 0 0 800**

This element annually determines the adequacy of the fee charged to generators of commercial spent nuclear fuel (SNF), in accordance with the Nuclear Waste Policy Act of 1982. Periodically, the Department's recommendation requires the conduct of Total System Life-Cycle Cost (TSLCC) analyses to support the decision of whether program revenues are sufficient to cover the cost of the program. In addition this element supports Independent Cost Estimate (ICE) reviews and reconciliation process for updating the total system life cycle costs. Specific items for FY 2005 include:

- Update the Total System Life Cycle Costs Analysis and the Fee Adequacy Analysis and provide results to Congress.
- Conduct an independent review of the contractor costs and schedules supporting the life cycle costs analysis: develop independent bottoms-up cost estimate and detailed review of schedule duration and logic ties;
- Enhance cost/scheduling capabilities to produce quicker turnaround analyses to DOE decision-makers and congressional queries; and
- Provide additional resources to support the Office of Environmental Management and the Advanced Fuel Cycle Initiative in their decision-making processes.

■ **Waste Acceptance 1,500 6,300 5,550**

Specific activities in FY 2005 include:

• **RW Interface Coordination 250 300 350**

Manage interface/liaison with other affected elements of the Civilian Radioactive Waste Acceptance System.

• **Waste Acceptance Planning 400 800 1,000**

Coordinate waste acceptance operational requirements to support acquisition of transportation cask fleet and associated equipment. Maintain SNF inventory assumptions for

commercial SNF and DOE-managed SNF and HLW. Develop requirements for emerging commercial SNF waste forms.

- **Standard Disposal Contract Management** **250** **1,000** **1,000**

Implement the Standard Disposal Contract and other agreements; validate and disseminate utility supplied SNF discharge/storage data; and, update the Utility Spent Nuclear Fuel Discharge Projections and Analysis document. Update verification requirements as required. Negotiate and implement modifications as required in individual Purchaser contracts by working with the individual Purchasers. These contract modifications would facilitate the acceptance and transportation of SNF from commercial nuclear utilities.

- **DOE Waste Acceptance** **300** **4,200** **3,200**

Implement the responsibilities established in the Memoranda of Agreement for acceptance of DOE-owned SNF and HLW and Navy spent fuel. This includes issuance of HLW data needs; development of acceptance capacities for DOE and Navy materials requiring acceptance, transportation, disposal and establishment of fee payment schedules. Coordinate with DOE-EM to identify issues that may arise from changes in EM Waste Acceptance programs. Participate in extensive interactions with all EM and affected sites. Perform technical analyses and assessments as required to incorporate evolving DOE waste forms into the RW planning basis. Update the Waste Acceptance System Requirements Document and develop general specifications for new DOE waste forms to allow for accelerated DOE site closure.

- **Litigation Support** **300** **0** **0**

Department of Justice support for litigation involving Civilian Radioactive Waste Management system.

- **Regulatory Coordination** **913** **900** **3,500**

The focus is on plans and strategies for compliance with applicable statutes and regulations. Specific activities in FY 2005 to establish program-level regulatory policy and requirements related to Safeguards and Security (S&S) include to:

- Establish Program-level regulatory policy, licensing strategy, and requirements related to Safeguards and Security (S&S) and support implementation of requirements.
- Prepare and submit the draft Physical Protection Plan to NRC
- Prepare and submit the draft Material Control & Accounting Plan to NRC
- Prepare and submit the draft Security Organization Personnel Training and Qualification Plan to NRC

- Prepare the Safeguards Contingency Plan.
- Conduct vulnerability assessment to support repository design

■ **Program and Policy Integration 1,187 1,171 1,500**

This element also supports emerging issues involving legislative and policy analysis, presentations to stakeholders and technical groups, and tracking and analyzing legislative initiatives with relevance to the program. Front office support does not general technical data, but is responsible for monitoring the quality, consistency and timeliness of information and ensuring the information is distributed with the program and to appropriate outside groups.

International Waste Management 933 918 933

Institutional activities provide the framework for OCRWM collaborations and interactions with other nations and international organizations through vehicles such as bilateral agreements and memoranda of understanding. Funding in FY 2005 will be used to:

- Maintain existing bilateral agreements with radioactive waste management organizations in Canada, France, Japan, Spain, Sweden and Switzerland.
- Maintain the trilateral agreement with Canada and Mexico.
- Finalize bilateral agreements with Finland and the United Kingdom, and renew the bilateral agreement with EURATOM.
- Initiate bilateral agreement discussions with Brazil and Argentina to collaborate in areas of spent nuclear fuel management and disposal.
- Maintain participation in Program-related activities of the International Atomic Energy Agency (IAEA), Organization for Economic Cooperation and Development-Nuclear Energy Agency (NEA), and the International Association for Environmentally Safe Disposal of Radioactive Materials (EDRAM).
- Support U.S. State Department initiatives to facilitate peaceful uses of nuclear energy and promote internationally accepted practices for managing spent nuclear fuel and high-level radioactive waste.
- Provide resources to support Joint Convention on the Safety of Spent Nuclear Fuel Management and Radioactive Waste activities and to maintain the associated National Report of the United States.
- Establish a framework for Program involvement in the G-8 initiative: Global Partnership against the Spread of Weapons of Mass Destruction.

- Maintain the International Resources Database to remain abreast of spent nuclear fuel and high-level radioactive waste management programs in other nations and international organizations.

Total, Program Management & Integration	21,191	29,668	47,567
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Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)

Program Management

■ Quality Assurance

The Project has transitioned from the Site recommendation phase to the licensing and detailed design phase. This transition denotes a significant ramp up of design and licensing work and related activities. As a result, additional Quality Assurance budget is needed to support License Application; Engineering Design; long lead procurement oversight ; the preparation for on-site construction; increased compliance and performance based audits/surveillances of BSC, its subcontractors, the National Laboratories, and USGS; and for additional corrective action functions related to the overall increased scope of work. +4,650

■ Program Management and Control

Increased activity related to the annual work plans and capital asset management, including implementation of DOE 413.3-1 policies. The Nuclear Waste Fund investment portfolio and the Change Control Board (CCB) Program and project baseline support were also incorporated into this program sub-element. +775

■ Audits and Reports

This program sub-element was originally "Audits, Education, and Information." Increased cost is due to additional requirements placed on the Program for legislative, financial, and departmental reporting activities. +567

■ Public Information and Education

This sub-element was redefined in FY 2005 and some of the activities incorporated into Program Management and Control and Human Resources Support sub-elements. -735

■ Human Resources Support

Increase cost for needed supplies, non-computer equipment, publications, and services. +11

Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)

■ Baseline Management

This is a new mission activity incorporating into the Program Management & Integration subprogram, which includes, in part, developing, implementing, and maintaining the OCRWM baseline management plans and procedures. +300

■ Information Management

- OCRWM Gateway Portal Update – incorporate collaborative software and document management tools into the OCRWM Gateway environment, expand access to OCRWM legacy systems and information.
- Perform data architecture analyses and engineering to eliminate redundant information and improve effectiveness of OCRWM Gateway Portal implementation.
- Implementation of an OCRWM Enterprise Architecture (EA) and an EA management program.
- Enhance existing WAN to accommodate increasing user population
- Expand Storage Area Network capability to improve speed and reliability and to accommodate the Program’s increasing volume of federal records.
- Provide a 30 percent refresh of all existing systems (desktop, servers, printers).
- Increased number of Helpdesk/technical support staff to service anticipated increase in user population.
- Increased number of workstations and associated infrastructure to accommodate increase in ProCram workscope. +2,390

Total, Program Management	+7,958
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System Integration

■ System Engineering

The additional funding for the new program sub-element is due to the increased need for complete systems engineering, integration and analysis. In previous years systems integration and engineering was at a minimum as the program kept

Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)

resources focused on gaining a site recommendation and submitting the license application for Yucca Mountain. As NRC reviews the license application the program is developing more detailed components of the repository, waste acceptance and transportation systems. The integration of the system components to accept waste and move it to Yucca Mountain in 2010 will be require significantly more system integration and analyses. Studies on EM waste classification, loading options, manufacturing technologies, waste stream optimization are now necessary to ensure waste receipt in 2010. +3,500

■ System Analysis

The additional funding is due to the increased need for complete systems integration and analysis. In previous years systems analysis was at a minimum as the program kept resources focused on gaining a site recommendation, submitting the license application for Yucca Mountain, and minimizing any development of a transportation system. Studies on EM waste classification, loading options, manufacturing technologies, waste stream optimization are now necessary to ensure waste receipt in 2010. +3,447

■ Total System Life Cycle Cost

The apparent increase is due to the creation of a new line item for the total system life cycle costs and some increased work activities. This element was a subset of Systems Integration (now systems analysis) and historically received approximately \$500,000, making this increase only approximately \$300,000. The additional work needed is to integrate the new information on DOE wastes and more detailed design information for improved total system life cycle costs, and an independent review of the contractor cots and schedules supporting life cycle costs. +800

■ Waste Acceptance

The decrease is due to a reduced effort in the development of various technical analysis documents. -750

■ Regulatory Coordination

The increase is due to increased work in the area of safeguards and security due to the events of September 11, 2001 and the war on terrorism. Additional work is needed to analyze potential threat scenarios, and comply to emerging regulatory +2,600

Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)

requirements. There also expects to be an increase in NRC interactions during this period of license application review.

■ Program and Policy Integration

The increase is due to additional effort needed as the program policy moves from a program requesting a license to a future licensee, and construction project.

Several legislative activities will also be required to assure a construction

authorization such as potential land withdrawal activities. +329

Total, System Integration **+9,926**

International Waste Management

The increase in funding in the International area is a result of a combination of reprogramming work previously funded in the repository cost center and an

expansion of international activities. +15

Total, International Waste Management **+15**

Total Funding Change, Program Management & Integration **+17,899**

Program Direction

Funding Profile by Category

(dollars in thousands/whole FTEs)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
NNSA Service Center					
Office of Repository Development					
Salaries and Benefits	13,415	20,947	19,245	-1,702	-8.1%
Travel	500	567	850	+283	+49.9%
Support Services	18,603	18,603	25,458	+6,855	+36.8%
Other Related Expenses	4,367	4,367	2,780	-1,587	-36.3%
Total, Office of Repository Development . .	36,885	44,484	48,333	+3,849	+8.7%
Full-Time Equivalents	132	131	128	-3	-2.3%
NNSA Service Center					
Salaries and Benefits	479	960	902	-58	-6.0%
Total, NNSA Service Center	479	960	902	-58	-6.0%
Full-Time Equivalents	6	6	6	0	0.0%
Total, NNSA Service Center	37,364	45,444	49,235	3,791	+8.3%
Full-Time Equivalents	138	137	134	-3	-2.2%
Headquarters					
Management & Operational Support					
Salaries and Benefits	6,337	9,274	11,126	+1,852	-20.0%
Travel	260	290	622	+332	+114.5%
Support Services	12,784	18,688	19,923	+1,235	+6.6%
Other Related Expenses	133	133	143	+10	+7.5%
Working Capital Fund	1,571	1,571	1,618	+47	+3.0%
Other Matrix Support					
Salaries and Benefits	1,154	4,317	4,811	+494	+11.4%
Travel	7	10	12	+2	+20.0%
Total, Headquarters	22,246	34,283	38,255	+3,972	+11.6%
Full-Time Equivalents	73	85	106	+16	+24.7%
Total Program Direction					
Salaries and Benefits	21,385	35,498	36,084	+586	+1.7%
Travel	767	867	1,484	+617	+71.2%
Support Services	31,387	37,291	45,381	+8,090	+21.7%
Other Related Expenses	4,500	4,500	2,923	-1,577	-35.0%
Working Capital Fund	1,571	1,571	1,618	+47	+3.0%
Total, Program Direction	59,610	79,727	87,490	+7,763	+9.7%
Total, Full-Time Equivalents	211	222	240	+18	+8.1%

Mission

Program Direction provides overall direction and administrative support for the Office of Civilian Radioactive Waste Program to manage and dispose of the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW).

As stated in the Departmental Strategic Plan, DOE's Strategic and General Goals will be accomplished not only through the efforts of the major program offices in the Department but with additional effort from offices which support the programs in carrying out the mission. The Office of Civilian Radioactive Waste Management performs critical functions which directly support the mission of the Department. These functions include complying with NRC requirements, developing and maintaining the Quality Assurance requirements and procedures, and conducting audits, surveillance, and reviews of M&O and other participant activities.

Detailed Justification

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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Salaries and Benefits	21,385	35,498	36,084
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Funds salaries, awards, lump sum leave payments, retention and recruitment bonuses, benefits and buyout compensation for full-time permanent and other than full-time permanent employees.

Travel	767	867	1,484
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Includes all costs of transportation of persons, subsistence of travelers, and incidental travel expenses in accordance with Federal travel regulations which are directly chargeable to OCRWM.

Support Services	31,387	37,291	45,381
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Includes all costs which are defined as advisory and assistance services acquired by contract from non-governmental services to support or improve the OCRWM organization. This element provides support for the following activities: complying with NRC requirements, developing and maintaining the Quality Assurance Requirements and Description, developing Quality Assurance procedures, and conducting audits, surveillance, and reviews of M&O and other participant activities. Support services also provide an independent technical review capability of the work accomplished by the DOE National Laboratories and the management and operations contractor. In addition, funds are provided for the operation and management of the communications network and computer facilities.

Other Related Expenses	4,500	4,500	2,923
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Includes funding for building maintenance, Yucca Mountain rents, communications, utilities, computer/video support, training, printing and graphics, photocopying, postage, supplies, and common administrative services.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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Working Capital Fund **1,571** **1,571** **1,618**

Includes funding for headquarters building maintenance, rents, communications, utilities, computer and video support, printing and graphics, photocopying, postage, supplies and common administrative services.

Total, Program Direction **59,610** **79,727** **87,490**

Explanation of Funding Changes

FY 2005 vs.
FY 2004
(\$000)

Salaries and Benefits

- The increase in salaries and benefits is due to additional hiring FTEs during the year. +586

Travel

- The increase in travel is related to the licensing application process and transportation-related activities. +617

Support Services

- The increase is due to additional management and technical support for information management, including considerable increase in the cost reductions and systems enhancements to evaluate and support scientific investigations and analyses of current and developing technologies, and national and Nevada transportation-related procurement activities. +8,090

Other Related Expenses

- The decrease is related to the reduction in the leasing property obligations -1,577

Working Capital Fund

- The increase is due to general rise in price levels for all services. +47

Total Funding Change, Program Direction **+7,763**

Support Services by Category

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Technical Support					
Yucca Mountain Project					
Management and Technical Services	13,275	13,275	17,223	+3,948	+29.7%
Information Management	3,865	3,865	5,239	+1,374	+35.5%
Technical Alternatives	0	0	1,000	+1,000	+100.0%
Administrative Services	1,463	1,463	1,996	+533	+36.4%
Total, YUCCA Mountain Project	18,603	18,603	25,458	+6,855	+36.8%
Transportation					
National Transportation	0	0	4,000	+4,000	+100.0%
Nevada Transportation	0	6,000	1,000	-5,000	-83.3%
Total, Transportation Project	0	6,000	5,000	-1,000	-16.7%
System Integration					
System Analysis.	300	294	300	+6	+2.0%
Fee Verification & Data Collection	270	290	320	+30	+10.3%
Waste Acceptance	700	770	720	-50	+100.0%
Mgmt & Technical Services: Regulatory Coordination .	700	687	500	-187	-27.2%
Program and Policy Integration	650	637	650	+13	+2.0%
Total, System Integration	2,620	2,678	2,490	-188	-7.0%
Total, Technical Support	21,223	27,281	32,948	+5,667	+20.8%
Management Support					
Program Management					
Quality Assurance: SAIC / NAVARRO	4,500	4,903	5,000	+97	+2.0%
Mgmt & Technical Services: Pgm Mgmt and Control . .	750	295	300	+5	+1.7%
Mgmt & Technical Services: Audits & Reports	0	0	1,133	+1,133	+100.0%
Mgmt & Technical Services: Public Info & Education .	417	403	0	-403	-100.0%
Information Management	4,497	4,409	6,000	+1,591	+36.1%
Total, Program Management & Integration	10,164	10,010	12,433	+2,423	+24.2%
Total, Management Support	10,164	10,010	12,433	+2,423	+24.2%
Total, Support Services	31,387	37,291	45,381	+8,090	+21.7%

Other Related Expenses by Category

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Other Related Expenses					
Yucca Mountain Project Office	4,367	4,367	2,780	-1,587	-36.3%
Headquarters	1,704	1,704	1,761	+57	3.3%
Total, Other Related Expenses	6,071	6,071	4,541	-1,530	-25.2%

